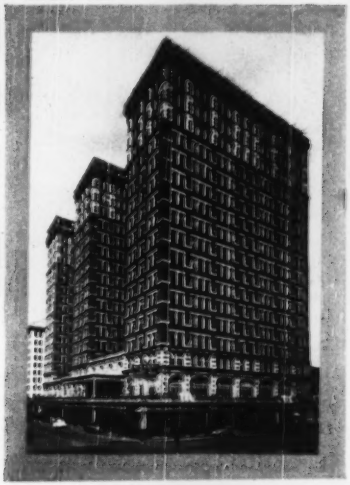
ENGINEERING NEWS-RECORD

SEVENTY-SIXTH YEAR OF PUBLICATION

★ [illegible] CUT COSTS

★ SAVING MONEY WITH SCALE MODELS

A McGRAW-HILL PUBLICATION



Combating a 12,000 gpm Corrosion Threat in the

"AIR-CONDITIONED CITY"

To completely air-condition the 1000-room Rice Hotel at Houston, Texas, 12,000 gallons of water per minute must be circulated between the engine room and the giant cooling tower on the roof of the hotel garage, 700 feet distant. To combat the inescapable corrosive attack, the engineers used Byers Wrought Iron plates in fabricating the 18-inch pipe which handles the flow. A substantial quantity of Byers Wrought Iron pipe was also supplied for cooling and condenser water lines within the hotel building.

Houston, which claims more air-conditioning than any other city in the world except Washington, D.C. calls itself the "Air-Conditioned City". This concentration of installations gives engineers and users ample opportunity to determine the worth of various materials. It is significant that wrought iron appears in practically every specification.

The durability of wrought iron in services like these comes from the unusual character of the material. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and "detour" corrosive attack. The fibers also anchor the initial protective scale, which shields the underlying metal just as a scab protects a wound.

If you are contemplating any air-conditioning installations, or are concerned with the maintenance of any existing systems, you will find some helpful information on the use of wrought iron in our bulletin, WROUGHT IRON IN REFRIGERATION, ICE SKATING RINKS AND AIR-CONDITIONING SYSTEMS. Ask for a complimentary copy.

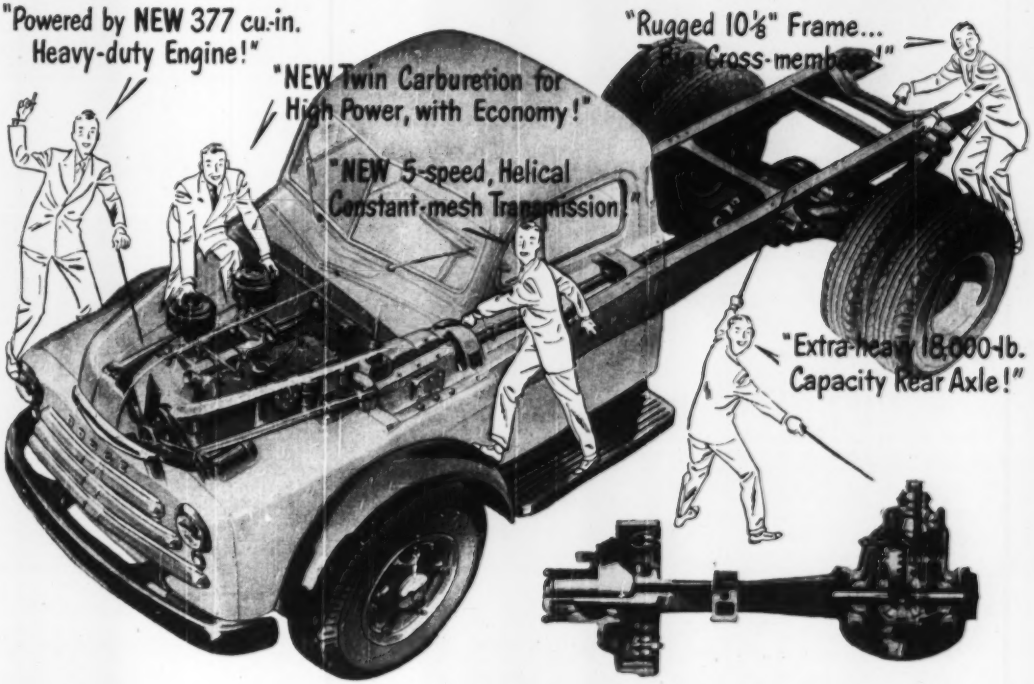
J. RUSS BATY, Architect on Hotel Garage; REG F. TAYLOR, Consulting Mechanical Engineer; CHAS. G. HEYNE & CO., Mechanical Contractors on Air Conditioning; KANE BOILER WORKS, Fabricators of 18" pipe; O. W. ROSIN, Chief Engineer, Rice Hotel.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.

CORROSION COSTS YOU MORE THAN WROUGHT IRON

BIG NEWS for haulers of BIG LOADS!

New Heavy-Duty 4-TON DODGE "Job-Rated" TRUCKS


"Powered by NEW 377 cu.-in. Heavy-duty Engine!"
"NEW Twin Carburetion for High Power, with Economy!"
"NEW 5-speed, Helical Constant-mesh Transmission!"
"Rugged 10⅛" Frame...
Cross-members!"
"Extra-heavy 18,000-lb. Capacity Rear Axle!"

There's a *new* champion in the HEAVY-DUTY truck field. It's the new Dodge truck rated at 28,000 pounds G.V.W. . . . 50,000 pounds G.C.W.!

Ample "*Job-Rated*" POWER flows from one of the finest-performing, and most economical truck engines ever designed. It develops 154 gross horsepower, and 330 pound-feet gross torque.

This remarkable engine contains such advanced long-life features as Silchrome intake valves and inserts. Exhaust valves are Stellite-faced and sodium-filled to resist warping, wear longer.

Hydraulic lifters insure perfect valve operation. Rustproof water distributor tube provides maximum valve seat cooling, and lengthens engine life. High power output and economy result from two downdraft carburetors. Features are numerous: Dual intake manifold; dual exhaust system; high anti-vapor-lock pump; ceramic fuel filters; velocity-type governors; oil-bath air cleaners, and many others.

This "*Job-Rated*" load lugger has a new and rugged constant-mesh, 5-speed helical transmission, direct-in-fifth, with an extremely high torque input. A 5-speed overdrive transmission is available.

This 4-tonner has a rugged 10⅛-inch frame, with 7 and 8 big crossmembers; extra-heavy 18,000- and 22,000-pound capacity rear axles, and many other HEAVY-DUTY features you'll want to study and compare.

If *your* transportation requirements fall in the 28,000-pound G.V.W. range (up to 50,000 pounds G.C.W.), we believe you'll find this 4-ton heavyweight your long-awaited answer to . . . *lower cost hauling!*

See your Dodge dealer at your earliest convenience.

For low-cost transportation...switch to DODGE "Job-Rated" TRUCKS

LEUPOLD
Engineered
PRECISION

HAND
LEVEL

Saves
...TIME
...MONEY

Insure against costly errors due to inadequate equipment. Insist upon Leupold & Stevens Instruments . . . tested, approved and used by engineers the world over for more than 42 years. When you buy Leupold & Stevens products you are assured the finest modern research and manufacturing can produce.

The Leupold Hand Level is precision built for a lifetime of service. Only the Leupold Hand Level has all these features:

- *Internal Focus.* When perfect focus on bubble is obtained for your eye, adjustment is locked in place; no need to re-focus every time level is used.
- Streamline design.
- Baked enamel finish with gun metal trim.
- 5½ in. long x ¾ in. diameter.

Price $10.50 . . . includes handsome saddle leather case. If your local dealer cannot supply you, order direct from Leupold & Stevens Instruments. Money-back guarantee.

Write for literature on complete line of Leupold Instruments.

INSTRUMENTS

LEUPOLD & STEVENS INSTRUMENTS

PORTLAND 13, OREGON

ENGINEERING NEWS-RECORD

VOLUME 144 JANUARY 12, 1950 NO. 2

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

The Saguenay is Bridged with Aluminum 32
Steel Dam in Good Shape After 50 Years ..... G. W. Lamb 36
Building a Concrete Wall Under Water 38
Five Tunnels Make One London Subway Station 39
Scale Models Can Save Money ..... R. A. Lester 41
Traffic Control Cuts Toll 42
Fast, Low Cost Construction on New Hampshire Pike 43

DEPARTMENTS

Construction Week 17
Construction Trends 19
Editorials 21
News of the Week 23
Notes on Legal Decisions 40
Field and Office 47
Developments Abroad 50
Municipal Affairs 52
Education and Research 54
Men and Jobs 56
Obituaries 58
Elections and Activities 60
Unit Prices 61
Construction Reports 65
New Products 86
Perspective 96

Number of copies of this issue printed . . 44,244

Managing Editor—Eugene E. Halmos, Jr.
Associate Editors—*New York*, V. T. Boughton, (senior associate), F. S. Merritt, R. H. Dodds, J. C. Bumstead, R. N. Larkin; *Cleveland*, J. R. Carr; *Chicago*, H. T. Perez; *San Francisco*, N. A. Bowers; *Washington*, V. R. Smith.
Assistant Editors—*New York*, T. D. MacGregor, Arthur J. Fox, Jr., Melvin Dean; *San Francisco*, L. L. Wise.
Contributing Editor—Edward J. Cleary.
Business News—Elsie Eaves, *Manager*; J. A. Mahoney, Robert F. Westervelt, M. W. Roessler, M. Wetzel, E. M. Huber, Jane Lucia.
Staff Assistants—Ethel Lyon, Louise Barker, Madalene Smith, Henry Lefer, Behri Pratt, Ruth Imler.
Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 72 cities in the United States, Canada and Mexico.
Foreign News Bureaus—London, Frankfurt, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. HOGER
Member ABC **Publisher** Member ABP

January 12, 1950 ENGINEERING NEWS-RECORD Vol. 144 No. 2

Publication Office—99-129 N. Broadway, Albany 1, N. Y.
Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.
Copyright 1950 by McGraw-Hill Publishing Co., Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co., Inc. JAMES H. McGRAW (1860-1948), founder; JAMES H. McGRAW, JR., President; CURTIS W. McGRAW, Senior Vice-President and Treasurer; JOSEPH A. GERARDI, Secretary; NELSON BOND, Vice-President and Director of Advertising; EUGENE DUFFIELD, Senior Vice-President, Publications Division; J. E. BLACKBURN, JR., Vice-President and Director of Circulation. Cable Address, "McGraw Hill New York."
Subscriptions: (1 yr., 2 yrs., 3 yrs.) U. S. and possessions $6, $8, $12; Pan America, $10, $16, $20; Canada, $8, $12, $16. All others, $20, $28, $40.

Address all communications about subscriptions to Director of Circulation. Price 25¢ per copy.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 28, 1936, at the Post office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

For projects ahead . . .

Plan on

MONOTUBE Foundations

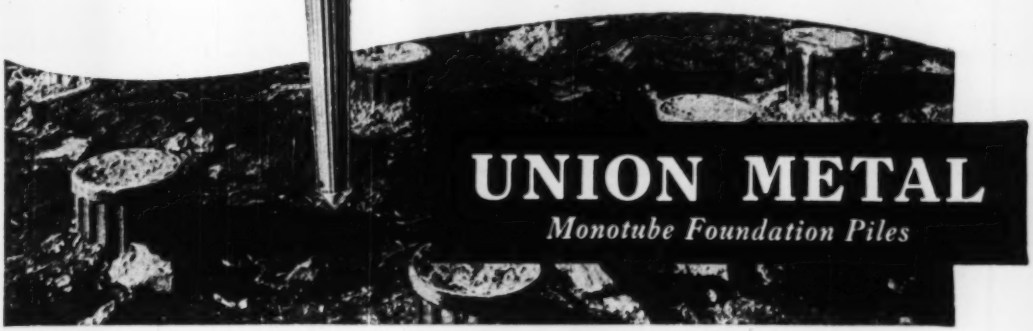
for time and cost savings

FORWARD-LOOKING engineers and builders are planning *now* to use Monotube tapered steel piles for their future construction projects.

They know from successful experience that Monotube foundations save time and money, because . . .

Monotubes are light in weight, easily and quickly handled; their fluted, tapered design speeds driving; they are easily extendible, right on the job; their sturdy construction makes it possible to eliminate use of a driving mandrel; Monotubes' tubular construction makes inspection, before concreting, quick and easy.

Plan your requirements for Monotube steel piles well in advance. Gauges, sizes and tapers to meet varying soil conditions. For complete information, write The Union Metal Manufacturing Co., Canton 5, Ohio.



UNION METAL

Monotube Foundation Piles

Symons Cone Crushers

SYMONS Cone Crushers and Symons Vibrating Screens, proven throughout the world in the most efficient stationary rock, ore and mineral processing plants, are being used in increasing numbers by successful operators of Portable and Semi-Portable Plants. Here are a few of the ever growing number of installations of Symons units in Portable and Semi-Portable materials producing plants.

The wide range of sizes and types of Symons equipment makes possible their use singly or assembled in combinations to fit your most exacting needs for producing greater tonnage of quality aggregate at lowest cost.

Whether you are a contractor, operator, highway construction engineer (municipal, county, state or Federal government), designer or manufacturer of Portable and Semi-Portable Plants, it will pay you to specify and use Symons machinery.

A series of suggested plant arrangements has been assembled into a new engineering brochure offering a wealth of information about the use of Symons Cone Crushers and Symons Vibrating Screens in Portable and Semi-Portable Plants. This brochure is especially valuable to *aggregate producers who are considering building their own plants, and to portable plant manufacturers.* It contains numerous drawings of single and multiple-stage plants, specifications, capacity charts, unit sizes, power requirements, conveyor sizes and other profitable information. Available free — no obligation. Send for your copy today!

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN
New York • San Francisco • Washington • Spokane
Mexico, D.F. • London • Toronto • Johannesburg

NORDBERG

Machinery for processing ores and industrial minerals

Gyratory and Jaw Crushers

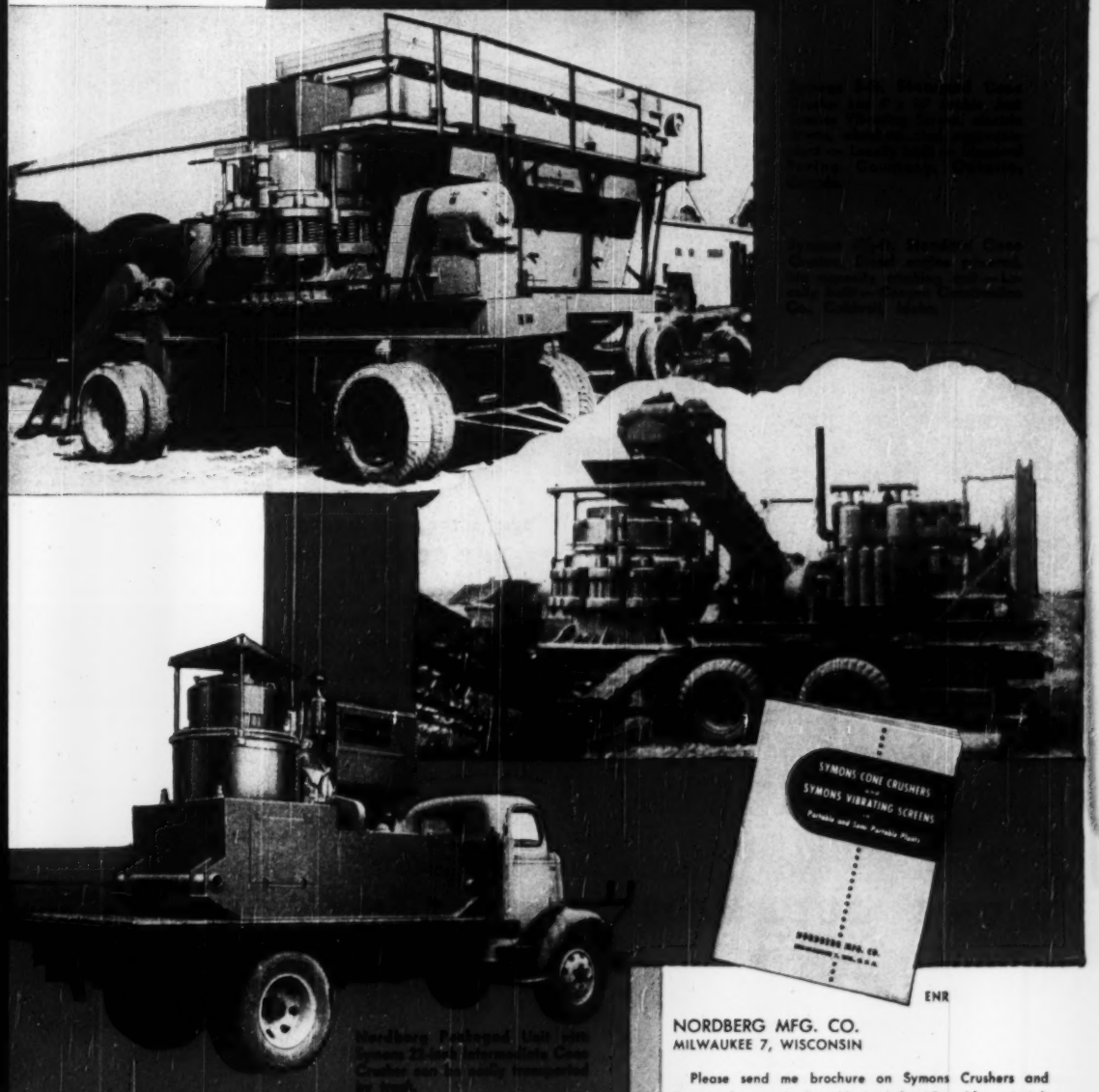
Jaw Crusher

Vibrating Bar Grizzly

Symons Screen for Hot Plants

Diesel Engines

IN PORTABLE AND SEMI-PORTABLE PLANTS



Fill in the coupon and mail it today for your free copy!

ENR

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

Please send me brochure on Symons Crushers and Screens for use in Portable and Semi-Portable materials producing plants.

NAME_____

STREET ADDRESS_____

CITY_____ STATE_____

YOUR LOADING PIER WILL LAST LONGER!

treated with

penta-
chlorophenol

PENTA-TREATED WOOD LASTS TWO TO FOUR TIMES LONGER THAN UNTREATED WOOD

Don't risk costly wood-weakening decay. Build with PENTA-PROTECTED WOOD. Wood treated with PENTA-chlorophenol is clean and easy to handle.

PENTA is a dependable wood preservative. It preserves wood under the most adverse climatic conditions. PENTA-PROTECTED WOOD is economical, pays for itself many times over in longer life and lowered maintenance costs.

Ask your lumber supplier for PENTA-PROTECTED WOOD. If he can't supply you, write to Dow, Dept. PE 19 for the name of the source nearest you.

THE CLEAN WOOD PRESERVATIVE!

How Wood Experts Regard PENTA

Utility companies *must* be right when they choose a wood preservative. Many utilities are switching to Penta for treating poles and crossarms—proof of the value of PENTAchlorophenol.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

DOW
penta
chlorophenol

OWEN

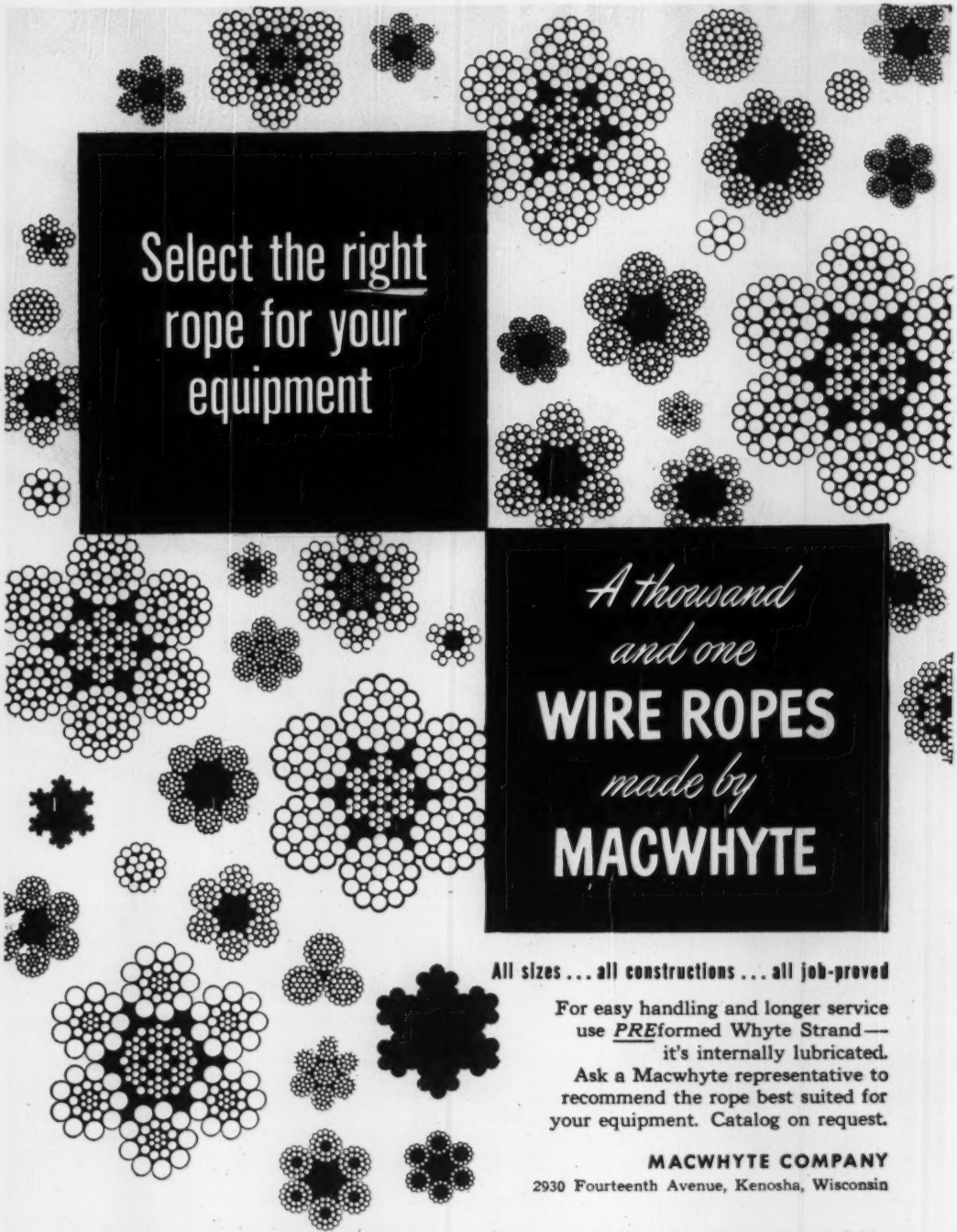
guarantees

HIGHEST EFFICIENCY

AND
MORE BITES
PER DAY
WITH A
MOUTHFUL
AT EVERY
BITE

The OWEN BUCKET Co.
6010 Breakwater Ave.
CLEVELAND, OHIO
Branches: New York, Chicago,
Philadelphia, Berkeley, Calif.

BUCKETS



All sizes ... all constructions ... all job-proved

For easy handling and longer service use *PRE*formed Whyte Strand—it's internally lubricated. Ask a Macwhyte representative to recommend the rope best suited for your equipment. Catalog on request.

MACWHYTE COMPANY
2930 Fourteenth Avenue, Kenosha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope. Our distributors and mill depots throughout the U.S.A. and other countries carry stocks for immediate delivery. Mill depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth • Portland • Seattle • San Francisco • Los Angeles

NEWS BRIEFS

Road Fund Diversion?—Connecticut Highway Commissioner G. Albert Hill sought unsuccessfully to have Gov. Chester Bowles veto a bill requiring the highway department to build and maintain all roads at state institutions, parks and forests. Hill said the bill allows other agencies to direct the spending of highway funds, regardless of the road budget's condition.

Waterway Facelifting—Corps of Engineers is completing a study of a proposal to double the existing single locks on the Illinois Waterways between Chicago and St. Louis. Also under study is the economics of deepening the present 9-ft. channel to 12 ft. Traffic has been increasing steadily for 17 years, with substantial increases in each of the last two years over 1947.

Oregon Loves It—Highway contractors working in Oregon are doing much more bidding than they were a couple of years back. Twenty-one bid on a job, recently, and on other bids in the recent past, the number of bidders ranged from 13 to 20—most of them under the estimates.

One for the Money—Interior has ok'd the proposal for railroad track relocation (ENR Dec. 22, p. 5) to make possible a waterfront memorial in St. Louis to Thomas Jefferson. Next problem is to allocate the cost—between the Terminal Railroad Association and Missouri Pacific. Both hope Interior will help pay the $5-$7,000,000 bill.

Busy Place—Seventy-three percent of construction authorized for the Army Engineers in the Missouri River basin has been put under construction. Contracts in force last month totaled $161,000,000. Others valued at $47,000,000 were completed last year.

Who Won What?—Massachusetts' Governor's Council has voted 7-2 to rescind an earlier order (ENR Dec. 22, p. 25) denying a contract for a pipeline to the M. DeMatteo Construction Co., Quincy. The tangle arose over whether pipe for the Metropolitan District Commission's Dorchester-Blue Hills Reservoir line had to be made in the state. The company has assured the council that the pipe would be made in Massachusetts. Earlier, it had complained that the specifications did not require this.

Not Much of a Record!—This country's "probable" new record of a mil-

(Continued on page 10)

Going down to stay!

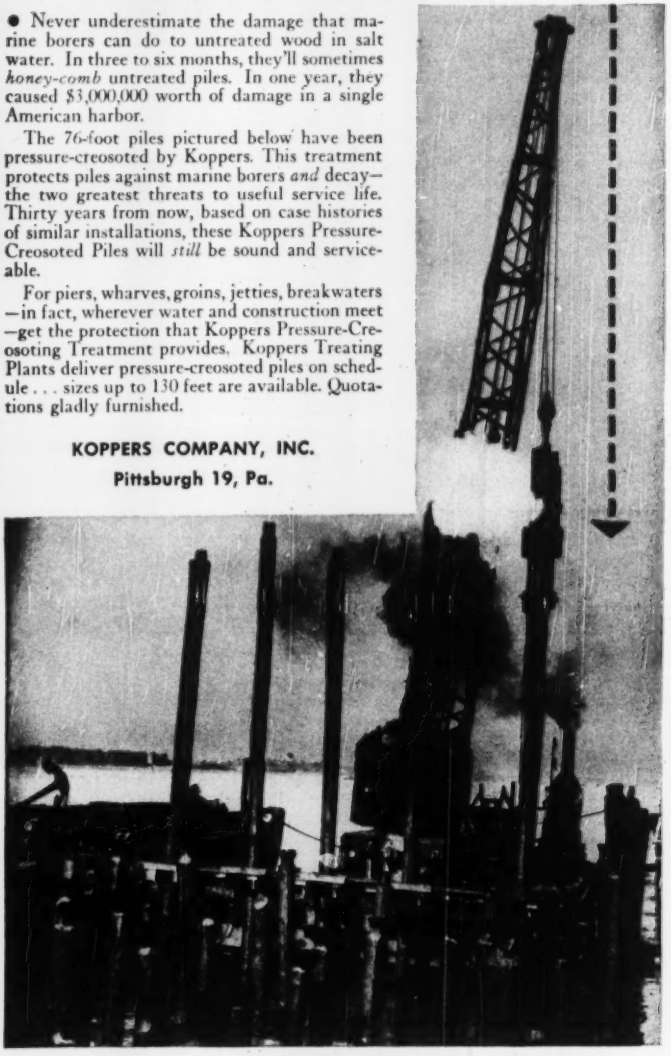
THEY'RE KOPPERS PRESSURE-CREOSOTED PILES

● Never underestimate the damage that marine borers can do to untreated wood in salt water. In three to six months, they'll sometimes *honey-comb* untreated piles. In one year, they caused $3,000,000 worth of damage in a single American harbor.

The 76-foot piles pictured below have been pressure-creosoted by Koppers. This treatment protects piles against marine borers *and* decay—the two greatest threats to useful service life. Thirty years from now, based on case histories of similar installations, these Koppers Pressure-Creosoted Piles will *still* be sound and serviceable.

For piers, wharves, groins, jetties, breakwaters—in fact, wherever water and construction meet—get the protection that Koppers Pressure-Creosoting Treatment provides. Koppers Treating Plants deliver pressure-creosoted piles on schedule . . . sizes up to 130 feet are available. Quotations gladly furnished.

KOPPERS COMPANY, INC.
Pittsburgh 19, Pa.



Foundation piles being driven for the 150-foot extension of the U. S. Coast Guard pier at Charleston, S. C.

KOPPERS **PRESSURE-TREATED WOOD**

(Continued from page 9)

lion new non-farm housing units in 1949 isn't good enough, according to Administrator Raymond Foley, of the Housing and Home Finance Agency. He says it's the minimum, not the maximum, level of production "we must have to make real progress toward our goal of a decent home for every American family."

New Year's Present—Huntsville, Ala., will accept the gift of a water and sewer system from the Huntsville Manufacturing Co. The system supplies a large textile industry and several hundred homes from a large spring and 1,500,000-gal. reservoir. The proposal is to run for 35 years, and will require that the company get 250,000 gal. daily at a cost of one cent per 1,000 gal.

Unlike New York—St. Louis Welfare Director Conway Briscoe has announced that the city will spend $15- to $20,000,000 on a seven-year waterworks modernization program. The announcement came after the Joint Council of Associated Engineering Societies of St. Louis warned that delay of the program "is endangering the city's water supply." Financing will come largely from the Water Department's cash reserve, which now stands at about $14,000,000.

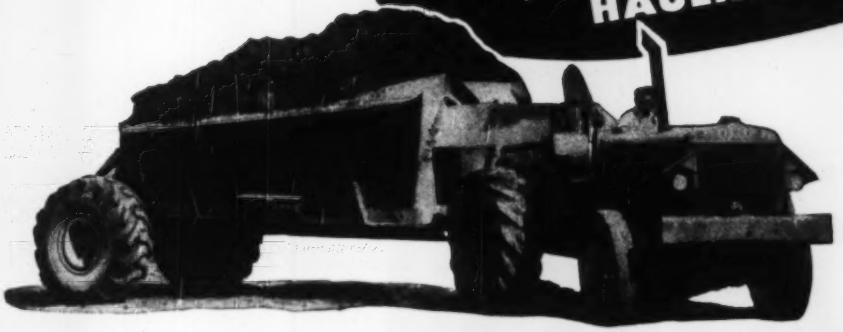
Trouble Ahead!—Indiana Highway Commission will need "at least" $26,000,000 to carry out its maintenance program in 1950, according to Chairman Samuel C. Hadden, who added that he expects to have barely $6,000,000 available for this purpose. New construction, including bridges, will proceed normally this year.

New Water-Use Dispute?—Army engineers, who have been criticized for asking enough Missouri River water for a 9-ft. navigation channel to Sioux City, have recommended that they be authorized to stabilize the river channel for navigation purposes as far as Yankton, S. D. Work on the channel to Sioux City is about three-fourths complete.

Big Year for Region 6—Contracts for about $60,000,000 worth of construction were in force between the Reclamation Bureau's Region 6 and private contractors at the end of the year. The area—Montana and Wyoming east of the Continental Divide and north of the Niobrara and Platte River basins, and North and South Dakotas—is a hotbed of Missouri River basin program work. The backlog at year's end was more than 40 percent greater than it was a year ago.

EUCLID

STANDARD EQUIPMENT *for* OFF-THE-HIGHWAY HAULING JOBS!



Leading contractors and industrial users of heavy earth moving equipment have standardized on Euclids because they know from experience that "Eucs" increase profits and cut hauling costs. "Euclids sure do the job . . . actually cost less to own than any other hauling equipment," owners say.

Large capacity, dependable performance, and lower operating and maintenance costs have made Euclid the choice for off-the-highway hauling jobs. Designed for a wide range of work, there are models for handling all types of material efficiently . . . earth, coal, ore, rock, and other heavy excavation.

Rear-Dump Euclids range in capacity from 10 to 34 tons and are available with standard or quarry bodies . . . semi-rigid or spring mounted drive axles . . . diesel engines from 125 to 300 h.p. Bottom-Dump models have capacities of 13 to 50 cu. yds., 20 to 40 tons, with diesel engines to 275 h.p.

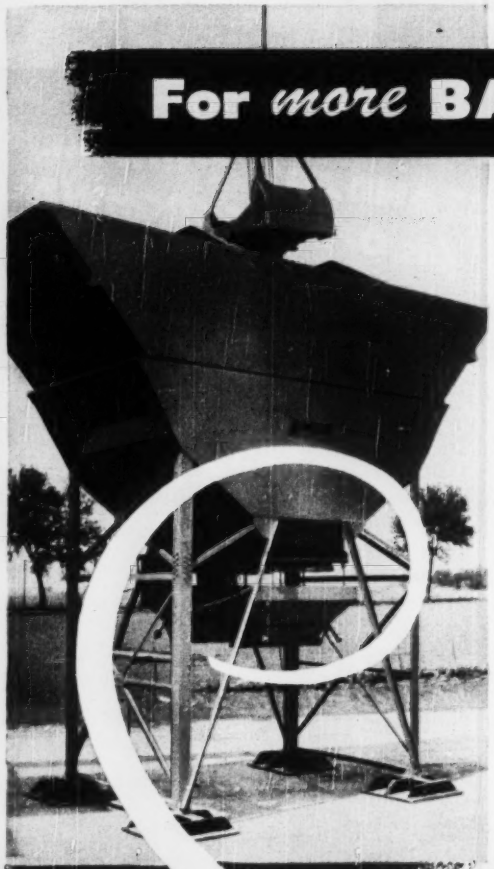
The parts and service facilities of Euclid's world-wide distributor organization assure prompt, efficient service to all Euclid owners. Write today for complete information on the Euclid line or call your distributor for an estimate on your present or future jobs.

THE EUCLID ROAD MACHINERY CO., CLEVELAND 17, OHIO

Cable address: YUKLID — Code: Bentley

EUCLIDS *Move the Earth*

For *more* BATCHING SPEED...



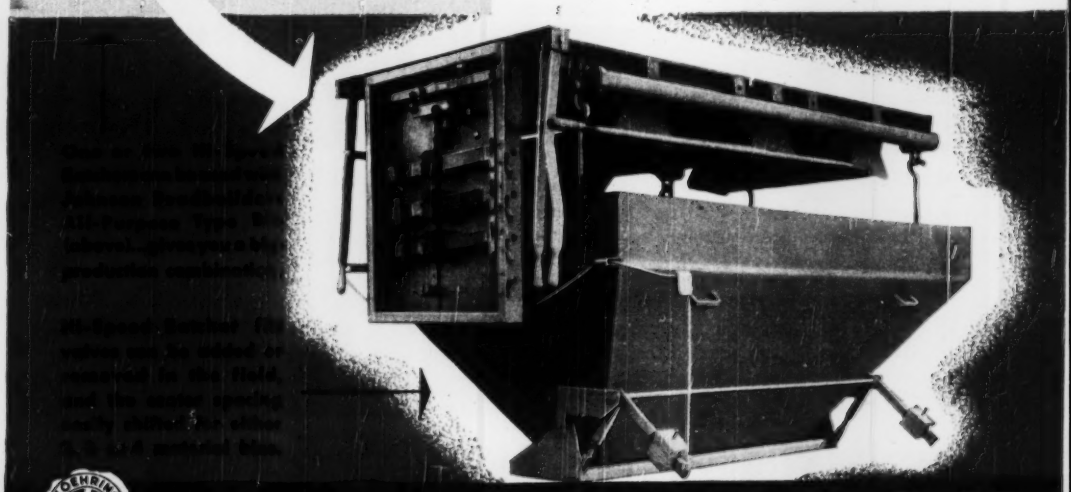
JOHNSON *Hi-Speed* Batcher handles 2, 3 or 4 materials

Where you want high-speed batching and extreme accuracy for uniform strength concrete every batch, *plus* quick convertibility to handle 2, 3 or 4 materials, check the Johnson Roadbuilders' Hi-Speed Batcher. Its extra-wide fill valves permit high-speed filling, and retain minimum batcher height.

Standard Hi-Speed Batcher has wide-discharge hopper and scale beams to handle standard batch for 34-E pavers. Self-loading, counter-weighted discharge gate on weigh hopper is easily tripped . . . opens wide . . . extra-steep angle of bottom cleans out hopper fast.

For charging truck mixers, Hi-Speed Batcher can also be equipped with 2, 3 or 4-yd. weigh hoppers. Truck-mixer type has 4-compartment bin . . . 1 for sand, 2 for aggregates, and 1 enclosed compartment for cement. Both truck-mixer hopper and wide-discharge hopper are interchangeable on the scale frame. Overhead unit frame supports all fill valves, hand levers, aggregate hopper and weigh beam box . . . provides convenient reassembly, and insures accurate alignment of scale parts at all times.

Let your Johnson Distributor show you *all* the Hi-Speed Batcher features that will help you produce top-quality concrete fast, with most economical use of materials.



KOEHRING PRODUCT

C. S. JOHNSON

.ACCURACY

ELEVATING CEMENT CHARGER
for batch plant or transfer plant operation. Standard Charger has size 14, 1000 lb. cap. cement weigh batcher hung under a 33-bbl. overhead storage hopper. Upper hopper can be equipped with two 1000 lb. weigh batchers. Quickly adapted to transfer plant by adding 50-bbl. extension hopper.

ROADBUILDERS DUTCH MILL
has 50, 100, 150-bbl. storage capacities. You can start with one 50-bbl. section, and add extra sections, as needed, to 150-bbl. maximum. Easy to erect, dismantle; elevator casing unit and drive are attached to each bin section. House section is big enough for dual batchers.

COMPANY
KOEHRING SUBSIDIARY
CHAMPAIGN • ILLINOIS

Save 25% with 205 shovel-pull shovel

Koehring ½-yard 205 has dual-purpose boom for both shovel and pull shovel operation . . . costs 20 to 25% less than conventional units requiring two separate booms. Crowd and retract cable is self-contained in boom . . . stays intact when boom is removed . . . saves time when you convert to crane, clamshell, dragline. Get all the facts in new 205 bulletin.

KOEHRING COMPANY

Every batch a perfect mix

Improved mixing action of the revolving drum of the Kwik-Mix 16-S Dandie mixes every batch of concrete for perfect texture. You get better concrete because every particle of the aggregate is completely cement-coated. Same thorough mix in all Kwik-Mix Dandie mixers including 3½-S, 6-S, and 11-S sizes. Tower Loader available.

KWIK-MIX COMPANY
KOEHRING SUBSIDIARY

Sidesteps side obstructions

Boom of the Parsons 221 Trenchliner* quickly and easily rides on rollers from side to side across the full width of the Trenchliner. That's why the Parsons 221 Trenchliner can cut a trench as close as 10" from side obstructions. Trenches up to 8'6" depth, 16" to 36" wide.

CJ969 rev. *Reg. Trade-mark

PARSONS COMPANY
KOEHRING SUBSIDIARY

THE MEMBERSHIP OF A C. I. P. Century Club now has

The Cast Iron Pipe Century Club is probably the most unique club in the world. Membership is limited to municipal, or privately-owned, gas and water supply systems having cast iron mains in service for a century or more.

Although the Club is formally established, there are no dues, no regular meetings, and no obligations other than to inform the Recording Secretary if and

96%

OF ALL 6-INCH AND LARGER CAST IRON WATER MAINS EVER LAID IN 25 REPRESENTATIVE CITIES ARE STILL IN SERVICE

Based on the findings of a survey conducted by leading water works engineers

CAST IRON PIPE

DISTINGUISHED CLUB...
29 Members!

when the qualifying gas or water main is taken out of service, or, sold for re-use.

In spite of the unique requirement for membership, the Club roster grows, year by year. And why not, when answers to a questionnaire, mailed to gas officials in 43 large cities, show that *original* cast iron mains are still in service in 29 of the cities. And a survey sponsored by three water works associations, indicates that 96% of all 6-inch and larger cast iron water mains ever laid in 25 representative cities are still in service.

If your records show a cast iron main in service, laid a century or more ago, the Club invites you to send for a handsome framed Certificate of Honorary Membership. Address Thomas F. Wolfe, Recording Secretary, Cast Iron Pipe Century Club, Peoples Gas Bldg., Chicago 3, Illinois.

CLUB ROSTER

BUREAU OF WATER, DEPT. OF PUBLIC WORKS
Baltimore, Maryland

CONSOLIDATED GAS ELECTRIC LIGHT & POWER CO.
Baltimore, Maryland

PUBLIC WORKS DEPT., WATER DIVISION
Boston, Massachusetts

BOSTON CONSOLIDATED GAS CO.
Boston, Massachusetts

BOARD OF WATER COMMISSIONERS
Detroit, Michigan

FALL RIVER GAS WORKS COMPANY
Fall River, Massachusetts

CITY OF FREDERICK WATER DEPT.
Frederick, Maryland

THE HARTFORD GAS COMPANY
Hartford, Connecticut

BUREAU OF WATER
Lancaster, Pennsylvania

LOUISVILLE GAS & ELECTRIC CO.
Louisville, Kentucky

CITY OF LYNCHBURG WATER DEPARTMENT
Lynchburg, Virginia

MOBILE GAS SERVICE CORP.
Mobile, Alabama

MOBILE WATER WORKS COMPANY
Mobile, Alabama

NEW ORLEANS PUBLIC SERVICE, INC.
New Orleans, Louisiana

PUBLIC SERVICE ELECTRIC & GAS COMPANY
Newark, New Jersey

DEPT. OF WATER, GAS & ELECTRICITY
New York, New York

DEPT. OF PUBLIC WORKS, BUREAU OF WATER
Philadelphia, Pennsylvania

PHILADELPHIA GAS WORKS CO.
Philadelphia, Pennsylvania

QUEBEC POWER COMPANY, GAS DIVISION
Quebec, Canada

BUREAU OF WATER
Reading, Pennsylvania

DEPT. OF PUBLIC UTILITIES
Richmond, Virginia

WATER & SEWERAGE DEPARTMENT
City of Saint John, N. B.

DEPT. OF PUBLIC UTILITIES, WATER DIVISION
St. Louis, Missouri

THE CONSUMER'S GAS CO. OF TORONTO
Toronto, Ontario

DEPT. OF PUBLIC WORKS
Troy, New York

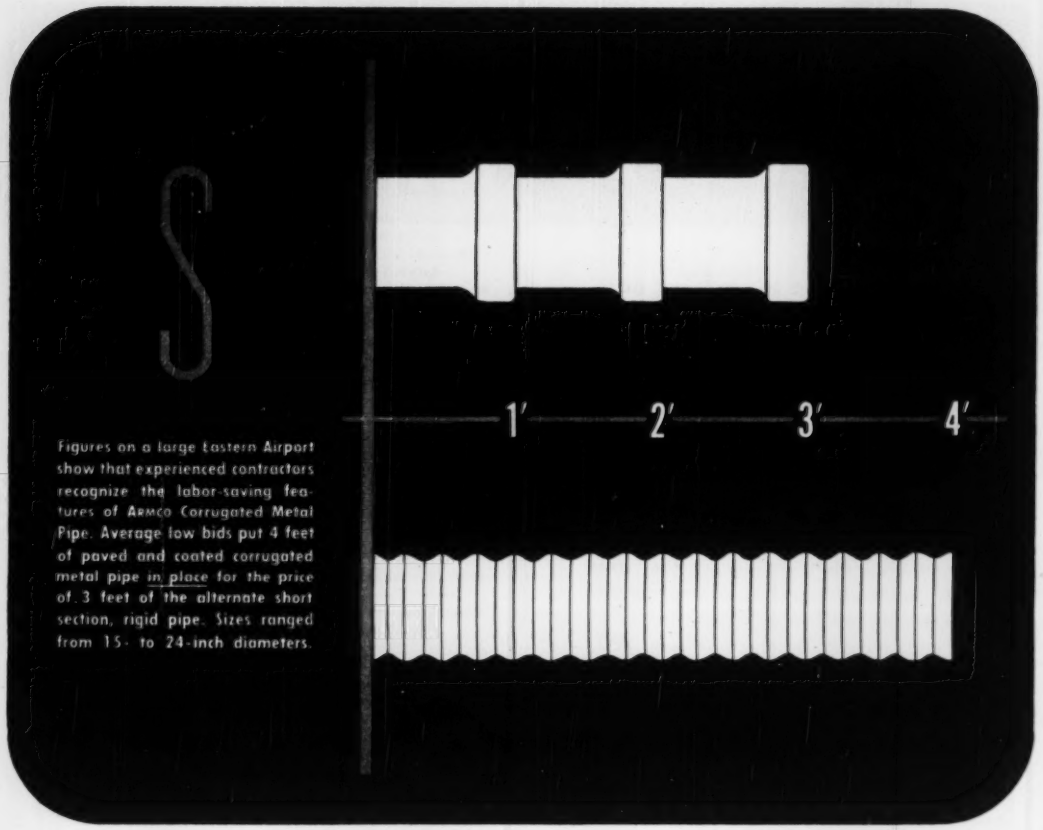
CITY OF UTICA, BOARD OF WATER SUPPLY
Utica, New York

CITY OF WHEELING WATER DEPT.
Wheeling, West Virginia

WILMINGTON WATER DEPT.
Wilmington, Delaware

YORK WATER COMPANY
York, Pennsylvania

SERVES FOR CENTURIES



Figures on a large Eastern Airport show that experienced contractors recognize the labor-saving features of ARMCO Corrugated Metal Pipe. Average low bids put 4 feet of paved and coated corrugated metal pipe in place for the price of 3 feet of the alternate short section, rigid pipe. Sizes ranged from 15- to 24-inch diameters.

Make your bid dollar go 33⅓% farther

Contractors have found that a dollar goes farther when they figure bids with ARMCO Corrugated Metal Pipe. It means lower bids with adequate profits and puts you in a sound competitive position.

Experience shows that ARMCO Pipe saves money in many ways. Although amply strong it often weighs only one-tenth as much as more massive types. This means low handling and hauling costs. Job costs are low because unskilled labor quickly makes the installation. There is no breakage, no curing, no waste, no delay.

Individual sections of ARMCO Pipe or PIPE-ARCH are supplied in any length that can be hauled or handled. No large and expensive equipment is required for installation. A few men with a rope sling or a small A-frame can handle the largest structure. Trenches need only be wide enough for men to work since there are no bells or massive joints that require extra digging. Connections are made with simple band couplers. End finishing is easy and inexpensive with prefabricated ARMCO End Sections.

Bid low on that next contract with ARMCO Corrugated Metal Pipe. You will find it ideal for highway, railway, airport or municipal installations. Write for complete information. Armco Drainage & Metal Products, Inc., 1465 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation

ARMCO DRAINAGE STRUCTURES

THE CONSTRUCTION WEEK

TURNPIKE FINANCING—If the announced plan of the New Jersey Turnpike Authority—to sell its bonds directly to large insurance companies—goes through, toll roads stand to lose some of their strongest supporters: the Wall Street bond houses. The New Jersey deal would bypass the bond houses—some of which have already put in considerable time on plans for handling the sale of the $230 million in bonds that the Turnpike Authority expects to issue. Financial observers say that the "savings" the Turnpike Authority expects to make through the direct sale are for the most part fictitious.

MORE FOR HIGHWAYS—Prospect is that more aid for highways will be authorized before the current Congressional session adjourns. The new program will be for 1951 and later—present program of $450 million yearly (on a dollar-for-dollar matching deal with the states) expires June 30, 1951. But Congress must act on any new program this year, so that state legislatures meeting next January can make new plans. Washington thinks the present aid program will be boosted upwards —perhaps to $800 million yearly—with funds granted to the states on a two-for-one or even three-for-one dollar basis where the interstate system is involved. Best omen for such a program is this: Road building is badly needed, and this is an election year.

SLUM CLEARANCE—Housing and Home Finance Agency's new slum clearance division—formed finally in October after long Congressional delay—is expecting 200 cities and towns to get on the slum clearance bandwagon soon. With a $500 million fund available for aid to cities in clearing and modernizing slums, HHFA has mailed out application blanks to the cities. As returned to HHFA, the applications won't be binding on the cities; they'll be letters of intent accompanied by city council resolutions attesting the city's purpose to undertake the work by July 1, 1951. On receipt of the applications, funds will be set aside out of $200 million advocated for the first two years of the five-year program; after which the local government can get a loan for studies to establish that it has eligible projects.

CONCERNING ELECTIONS—One of the keys to the current ruction over union-shop elections in the construction industry (ENR Jan. 5, p. 32) is this: NLRB General Counsel Denham is going to follow his own policy, irrespective of the position the board members take on his recommendations. In other words, he has not, and will not, issue charges of unfair labor practices against any employers where the charges would be based on the failure of NLRB to hold an election. This does not legalize closed shop practices, however. A real difficulty, of course, lies with the unions themselves—in their reluctance to drop their own requirements of the closed shop.

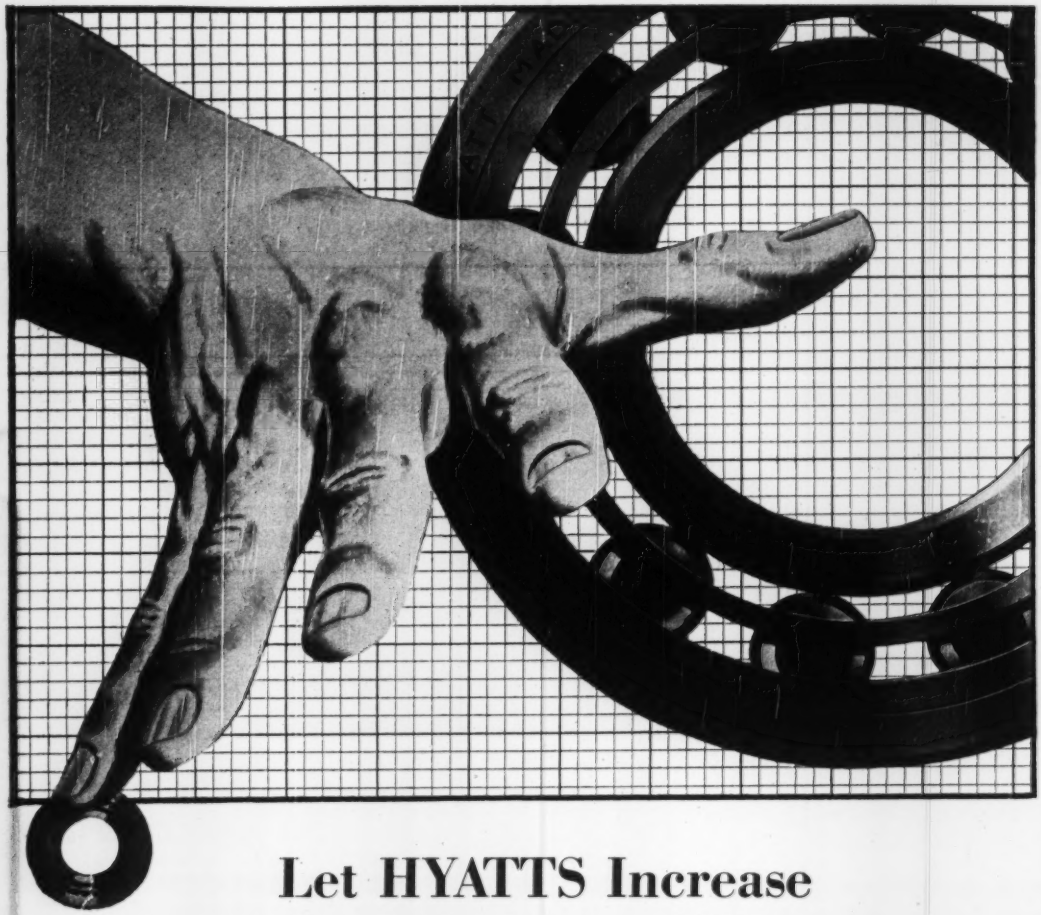
FAST—Middle-income housing legislation got an early start in the new session of Congress. Chairman of the Senate Banking Committee Jan. 6 introduced an Administration housing bill designed to facilitate the financing of cooperative and other non-profit ventures with private capital at interest rates of about 3 percent.

To attract capital investment by insurance companies and other state-regulated lending institutions, the bill would set up a government-controlled corporation whose debentures would be guaranteed by the United States. Hearings were set for Jan. 11.

LESS APARTMENT BUILDING?—With aid from the federal government expected to end, experts are looking to a drop in apartment construction by summer. Last year's boom resulted largely from Section 608 assistance—FHA insurance of mortgages up to 90 percent of estimated costs on big rental projects. Chances are that Congress will let this authority die March 1—or at least tighten it up. A reason for killing the aid program: The belief that apartments are being overbuilt in some areas, particularly in the upper rental brackets.

INVESTIGATION DUE—On the subject of aid for apartment builders, by the way, you may see a new Congressional investigation started—to find out if FHA has insured mortgages for more than 100 percent of actual costs. If it has, then some project backers have been handed a profit before they ever moved a tenant into their buildings. FHA says such a thing could have happened under policy of basing insurance on "estimated" costs.

BRIGHT SPOTS—Two major builders' organizations agreed on a bright spot in the building picture for 1950. Said the Producers' Council: Cost of building will show little change as compared to 1949. Said New York's Building Trades Employers' Association: Over-all building costs have been stabilized—at a level substantially below the post-war peak of 1948. Both groups credited part of the stabilization to rising labor productivity.



Let HYATTS Increase the Life Span of Your Machinery and Equipment

If you build, sell or buy machinery or mechanical equipment, you know that wheels, gears and shafts must operate smoothly, accurately, quietly to be efficient.

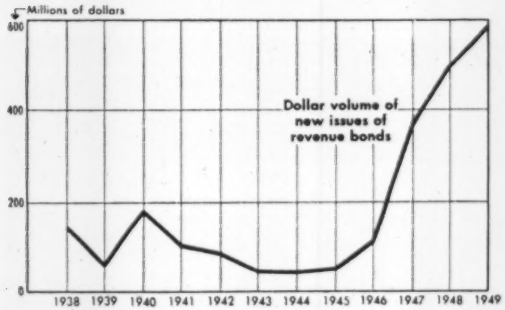
Load capacity—speed—size—space are reckoned with by experienced engineers in every field who for more than fifty years have applied Hyatt Roller Bearings to machinery and equipment of every description.

With Hyatts applied in the vital positions, longer life is built in—non-stop production is assured—power costs are cut and everyone—builder, seller and buyer—is satisfied with their bearing equipment.

Perhaps we can help you. Just write to Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.

HYATT ROLLER BEARINGS

CONSTRUCTION TRENDS



REVENUE BONDS GAIN POPULARITY

(Part III of a series)

Fast-growing, but still a comparative stranger to most people, the revenue bond is now financing an important part of all non-federal public construction. Furthermore, by all the signs, it will pay for a larger and larger part in the years ahead.

In 1949, something more than $600 million worth of revenue bonds were issued. That is roughly four times the volume of revenue bonds floated in 1938. And it's almost one-quarter of all new issues of state and local government bonds that were floated. Almost all of these bonds are used to finance construction.

Moreover, the prospect is that revenue bonds will make up a growing proportion of non-federal construction financing. The proportion may not be much more than 25% next year, because financial markets expect a flood of tax-supported bonds to finance the 80,000 or so public housing units due under the new federal housing act. But market observers expect that revenue bonds may well amount to one-third, or possibly as much as one-half, of the volume of non-federal, tax-supported bonds in future years.

The revenue bond has two outstanding features: (1) It is a loan, usually issued under the auspices of some public agency, that is to be repaid not from taxes, but from the income of the project it helps to build; and (2) because it is isued by a public or semi-public agency, the return on it is not taxed by the federal government. Two typical issues of revenue bonds are those issued by the Port of New York Authority and those used to finance the Pennsylvania turnpike. Others, however, finance a wide variety of projects, from water systems to public garages.

Reason for popularity of revenue bonds are easy to understand—both from the local government's point of view and from the buyer's standpoint. They make it possible to set up inter-state or other semi-governmental agencies—such as the Port of New York Authority—which can be financed without drawing on general tax revenues. These agencies, in turn, can operate utility systems, bridges, highways, airports and even docks and hospitals as self-supporting ventures, paid for by the people who use them. The bonds usually do not come under debt ceilings set for states or municipalities.

In many cases, they do not have to be passed on by the voters. Generally, too, they sell well. Investors like them for several reasons: The return on the bonds is free of income taxes. The return, however, is based not on taxes, but on the income of the project. On a bridge or highway, for example, tolls cover the cost of operation and interest and repayment of bonds. That often makes a bridge—or similar utility—as good or a better risk than a town, city, or state whose income depends wholly on what it can collect in taxes.

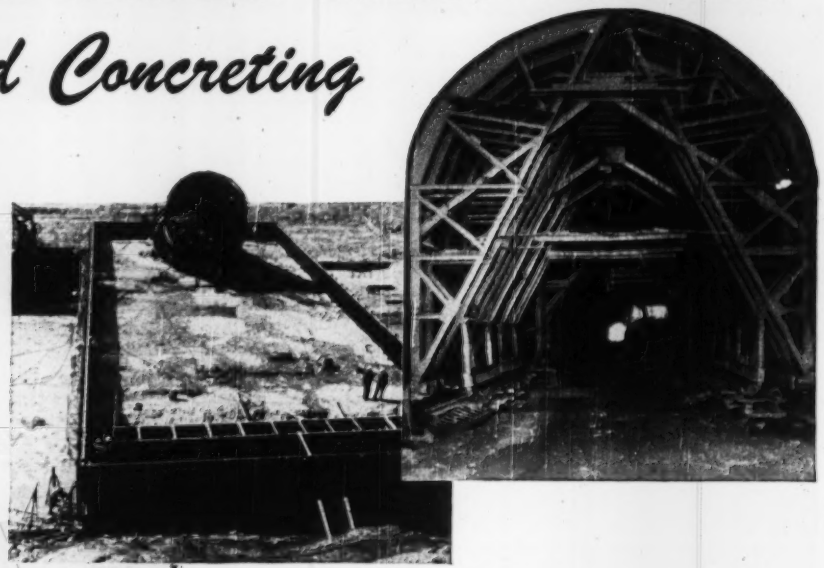
All this bears importantly on construction prospects: The more revenue bonds can be used to finance this kind of construction, the less will be the burden on the taxpayer. As a recent Construction Trend points out, states and municipalities might double their tax-supported debt. But they can more than double their overall debt if they issue more revenue bonds—not tax supported and not included in constitutional limitations on local debt. In fact, the total state and local debt, including revenue bonds, might be tripled. From the level of about $18 billion in 1949, the net debt (excluding the bonds held by the issuing governments themselves, or other governments) might go to as much as $45 billion. Debt financing by states and municipalities may be increased to the $4 billion a year level—from the approximate $3 billion annual level of the present time.

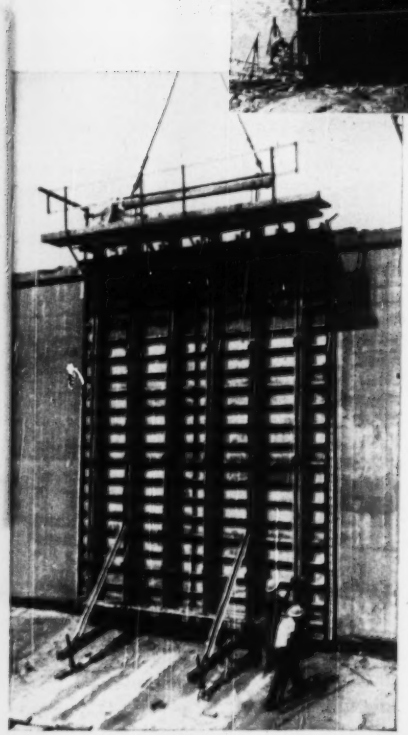
From the construction industry's viewpoint all this boils down to one thing: State and local governments have lots of room for further debt financing. If the voters give them the go-ahead, they can finance the construction work they need. The result is likely to bring contract awards for this kind of work up to the $4 billion a year level in the next few years. In the long run, contract awards may increase by still another $1 billion a year.

(Parts I and II of this series appeared in ENR December 15, 1949, p. 19, and Dec. 22, 1949, p. 19. A fourth part will appear shortly.)

BLAW-KNOX STEEL FORMS

Speed Concreting of BIG jobs





HERE are a few typical examples of the modern, mechanized way to speed heavy construction jobs and save money in the process. When you use Blaw-Knox Steel Forms, there's no delay for dismantling or assembling. Fewer operations, less auxiliary material and fewer workmen are needed. They are designed to fit the widest variety of work, from big tunnels, bridges or dams to small sewers, with many perfected details that cannot be duplicated in wood forms.

Whatever your next pouring job, take advantage of Blaw-Knox skill and experience developed over 40 years of building Steel Forms for big construction projects. As the oldest manufacturer of Steel Forms, Blaw-Knox is qualified to offer an engineering consultation service that will help you profit from a superior quality of finished work, faster, and at lower cost. There's no obligation...write for details today! *For special design suggestions, ask for Bulletin 2035.*

BLAW-KNOX

BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington

Water Resources Policy

PRESIDENT TRUMAN has set up a temporary commission to study and report to him on federal policy with respect to water resources. Such a move is long overdue. Properly focused such a commission can perform a useful service.

The President holds that the present federal approach to development of the nation's water resources is on a piece-meal basis, with little or no consideration given to how a particular project for which federal funds are asked fits into a long-range plan for the stream on which it is located. There is much ground for that conclusion, hence a critical review of federal policy has much to commend it.

During the past few decades the federal government has been importuned into putting millions into many water projects of questionable value. Future years probably will see more rather than less of that. For example: The best irrigation sites already have been developed. Most of the remaining sites will cost so much per acre as to make them uneconomical, or else they will be found to lack a dependable source of water except in wet cycles. Yet it appears obvious that strong pressure will be put on Congress in years to come to build many of these projects.

Much the same considerations apply to flood-control and power projects. Strong pressure will be put on Congress to build flood-control dams—especially those in which some justification can be found for the installation of power equipment—although the effect of the dam on flood crests below may be negligible.

More attention also needs to be given to the question of how any water project fits into the overall planning for each river system, as the President observed in announcing appointment of the new commission. Some progress in that direction has been made in setting up inter-agency committees such as the one for the Missouri River basin, but that plan is far from ideal. There still is conflict in basic thinking of the Army Engineers and the Bureau of Reclamation.

The Hoover Commission recommended the creation of a Board of Impartial Analysis, reporting directly to the President, to insure that there will be proper integration of water-use plans. If the new temporary commission concludes that the water resource policy it may recommend can only be implemented by the establishment of such a permanent board of review, the Hoover Commission proposal would be strengthened, even though Congress or the President might decide against the Hoover proposal of putting all river work in a reorganized Department of the Interior.

Unfortunately, the President's proposal came close on the heels of a proposal by Senator Irving M. Ives of New York that Congress set up a commission to look into the whole question of the adequacy of the nation's water resources, a proposal that had its origin in New York City's current water shortage. That gives the President's appointment the character of a countermove on the part of the Truman administration, and creates the impression that one of the first objectives of the new Water Resources Commission will be to make recommendations with respect to what the federal government can do to help New York City. Actually, the appointment of this commission has been under discussion for several months.

We hope that the commission will carefully avoid such subjects as New York's water shortage. Time, not federal aid or federal intervention is all that is needed to solve New York City's problem. But even though that were not true, forcing this commission to make decisions on purely local problems would inevitably keep it from giving adequate attention to the more important fundamental questions of federal water-resource policy.

Vote of Confidence

ANNOUNCEMENT that some large life insurance companies are negotiating with the New Jersey Turnpike Authority for the purchase of the $230,000,000 in bonds it expects to issue brings to light what amounts to a significant vote of confidence in the engineers who made the traffic and income studies for that toll-highway project.

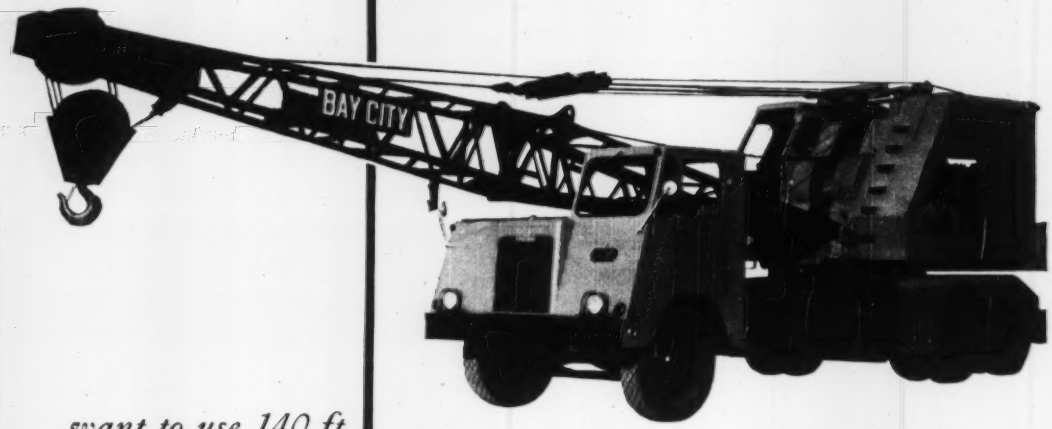
Life insurance companies are notably conservative in placing their funds. In fact, many states, for obvious reasons, require them to be. As a general rule, they never put money in undertakings without a proved return in excess of bond requirements. But here is a project that still is only on paper with no evidence of earning power other than engineers' estimates. Moreover, there is no physical property behind the bonds as security—no property that the bondholders can seize in case of default. In setting up its turnpike authority the New Jersey legislature was very specific on that point, also in stating that the state did not pledge its "faith and credit" for the bonds issued by the authority.

On the other hand, the same act makes the bonds legal for insurance companies and savings banks in New Jersey, and it states that the operation and maintenance of turnpike projects by the authority "constitute the performance of essential governmental functions." All of which leads one to wonder whether the insurance companies that are negotiating for the bonds have not concluded that, regardless of what the act says to the contrary, the state never will let the turnpike authority default on its bonds. That conclusion, backed by the engineers' estimates of adequate toll revenue, probably has put the turnpike bonds in an attractive bracket for insurance companies.

want to lift 22,450 lbs. with 90 ft. boom at 20 ft. radius?

YOU NEED A BAY CITY 190

CRANEMOBILE



want to use 140 ft. boom and jib?

YOU NEED A BAY CITY 190

CRANEMOBILE

want to set a 25 ton load gently and with accuracy?

YOU NEED A BAY CITY 190

CRANEMOBILE

Yes, with the 25 ton capacity 190 CraneMobile you get the answers to these questions, plus greater flexibility and mobility backed by bigger power units, easier operation and higher performance. We would like to tell you more about these fast reliable CraneMobiles, available in capacities from 7½ to 25 tons. Write us today.

BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

ENGINEERING NEWS-RECORD

JANUARY 12, 1950 VOL. 144 NO. 2

Truman seeks $3.34 billion for construction in budget

New projects held to minimum although request for funds is biggest in history—Highway aid held to $500 million a year—Major part to Army civil works

Vincent B. Smith
Washington Bureau

President Truman asked Congress this week to approve the largest construction budget on record—$3.34 billion of new money for federal public works expenditures in fiscal 1951. The total requested is 16 percent higher than the estimated federal construction outlay of $2.89 billion for the current year ending June 30.

Two surprises were contained in the portions of the budget message relating to construction. On future federal aid for highways, the President declared definitely for a two-year program at $500 million a year. This appeared to be an attempt to close the door on any discussion by his subordinates of alternative proposals—such as the $810 million recommended by the American Association of State Highway officials (ENR Dec. 1, p. 13). The second surprise feature was the dearth of new projects among the construction proposals.

There was good reason for the omission of new construction projects. The budget for fiscal '51 pays heavy toll to past wars and to future security. Expenditures for these purposes amount to $30 billion, or more than 70 percent of the $42.4-billion budget total. The remainder of the budget—for domestic programs—was held as low as the President's Fair Deal platform would permit.

Expansion jeopardized?

Trimming domestic expenditures led Mr. Truman to ask whether the budgetary demands of the national security and war-connected programs might not have caused the Administration to undertake too little toward realization of the country's great potential development. "It must be recognized," he said, "that failure to support essential federal activities would impede the continued expansion upon which the well-being of our economy and the soundness of the government's fiscal position alike depend."

Compared with fiscal 1950, budget estimates for 1951 show a 22 percent increase in civil public works to $3.11 billion, and a decrease in military public works from $345 million to $231 million.

Additional appropriations for military construction are indicated. A proposed $203 million for the Department of Defense is supposed to take care of a number of continuing construction programs: housing, research and industrial facilities, and military installations in Alaska, Okinawa and Guam, plus initial amounts for the development of an aircraft warning system (apparently the radar fence), the long-range proving ground for guided missiles, and the Air Engineering Development Center. Only $8,000,000 is listed for new projects of the military establishment.

Under the same category, the National Advisory Committee for Aeronautics would get $19.5 million for construction of facilities at four research stations, including $3.5 million for supersonic wind tunnels.

Rising expenditures under existing programs of the Corps of Engineers, Bureau of Reclamation, Atomic Energy Commission, Tennessee Valley Authority, Public Health Service and Public Buildings Service account for $365 million of the increased civil works outlay. New work for four of the agencies in this group adds another $60,000,000. Programs of the other construction agencies contribute to the rise in expenditures, though in smaller amounts.

More than 95 percent of all the budgeted construction money would be used to continue work on going projects or to make payments on previous commitments for loans and grants to states and localities. The budget includes no funds to start new projects in the fields of reclamation, flood control, rivers and harbors, or federal buildings. Of the $3.11 billion requested for civil works, only five percent would go to new undertakings.

New power projects

Though new construction developments are held to a minimum, exceptions are made for power projects in areas or shortage, for atomic energy

Expenditures for Civil Public Works

(Fiscal Years. In millions.)

	Expenditures 1949 Actual	1950 Estimate	1951 Bud. Est.
MAJOR PROGRAMS			
VA hosp.	$141.5	$223	$254
Bur. Pub. Rds	405	480.1	493.3
Bur. of Rec.	211.6	307.6	354.4
Corps of Eng.	448.2	584.9	695.4
Atomic Energy Comn.	312.4	297.1	400.1
HHFA (net)	8.2	94.8	99.4
OTHER PROGRAMS			
Pub. Health Serv.	10.1	73.4	136
Pub. Bldgs. Serv.	7.8	49	111.9
Agr. Dept. Forest Roads & Trails	17.6	96.5	26.6
CAA	48.8	80.2	106.3
Bonneville Power Admin.	22.1	32.3	39.7
Southwestern Power Admin.	2.7	5.0	9.3
Natl. Park Serv.	7.4	13.8	19.6
Bur. of Indian Affairs	10.3	17.1	25.1
Alaska Railroad	19	16.5	27
Int. Boundary & Water Comn. (U.S. & Mexico)	2.9	5.2	10.8
Coast Guard	3.7	6.5	7.1
Tenn. Vall. Auth.	47.1	78.9	117.9
RFC (net of repayments)	83.4	18.3	48.2
ALL OTHER	50.3	65.2	128.5
TOTAL, CIVIL PUBLIC WORKS	1,693.3	2,545.4	3,110.6
MILITARY CONSTRUCTION			
Army			88
Air Force			52
Navy			72

development, for airways facilities, and for schools in places where federal activities have increased enrollment. The President recommended a $6,000,000 appropriation for the St. Lawrence Seaway and power project—not yet approved by Congress—of which $4,000,000 would be spent in fiscal '51 to dust off the plans and start building construction towns. Also, the Tennessee Valley Authority would get nearly $7,000,000 to start two new dams—Boone and Fort Henry—on the south fork of the Holston River near Kingsport, Tenn.

For another power installation—part of a going project—$2,000,000 is included in a $49,500,000 recommendation for the Central Valley program in California to start the Delta steam plant, denied by Congress last year. The Bonneville Power Administration is listed to receive $5,000,000 to start new construction that will cost more than $68,000,000 to complete, involving principally the southwest Oregon power loop—due to meet strong opposition in Congress.

No construction money is asked for the southeastern power marketing area, operated by the Department of the Interior, but a supplemental appropriation is likely to be requested in fiscal 1951 to build transmission lines from multiple-purpose Army Engineer dams in the Kentucky-Virginia, Georgia-Alabama quadrangle.

New construction to cost $89,000,000 is to be started in fiscal '51 by the Atomic Energy Commission with an expenditure of $45,000,000 that year, largely at Oak Ridge, Tenn. The item for new work is small in comparison with the commission's total budget outlay of $695 million for construction in the same twelve months.

CAA airways program

A new program of the Civil Aeronautics Administration for improved airways navigation facilities to cost $45,000,000 is scheduled, to start with a $15,500,000 expenditure during fiscal 1951. In that year, CAA expects also to pay $2,500,000 in grants to new airport projects, which are included in more than $50,000,000 to be spent in fiscal '50 and '51, principally on larger-type airports of special importance to national defense, as well as to air commerce.

In addition to—and apart from—the measures that he has been advocating for federal aid to education, the President in his budget message urged Congress to vote grants for construction of school buildings in localities where federal activities have increased the school-age population. He requested a $45,000,000 appropriation, of which about $22,000,000 would be expended in fiscal '50.

Truman to push resource development

President Truman aims to keep the national economy expanding and, as a by-product of the expansion, collect sufficient revenues to more than pay all federal government expenses. His two messages to Congress last week—on the state of the union and the economic report—made it clear that the Administration will continue to push resources development, public power, housing and all the other socio-economic programs that the President and his advisers deem necessary for the stability and growth of national production and employment.

In both messages he foresaw a national output of $300 billion, in goods and services, attainable by 1954—$40 billion above the 1949 level. He asked the Congress to pass a dozen measures—recommended by him last year—which he declares will help to keep the economy rolling toward that goal.

Foresees heavier spending

Public works pronouncements in the two messages forecast no retrenchment in the programs put through last year. Rather, the President implied, expenditures in fiscal '51 should be larger, although he warned that progress would have to be slower than is advisable, because of other heavy drains on federal revenues.

His words in the message accompanying the economic report make the meaning clear: "After the restraints imposed by war and by postwar inflation, federal programs for resource development, transportation, education and health are just beginning to adjust to the needs of an expanding national economy. Even now, the requirements of national security, international aid, and veterans' adjustments are so urgent and so large that progress in developmental programs and community services must necessarily be limited to gradual advancement at a rate below the genuine need."

To that comment he added this pointed prediction: "Nevertheless, we are continuing to expand our investment in the development of our rivers for flood control, navigation, reclamation and electric power, in the expansion of our highways, and in the development of atomic energy."

Public power stressed

Both of the President's documents stressed a need to enlarge the production and transmission of public power.

Specifically, the President in both papers urged Congress to pass legislation authorizing the St. Lawrence seaway and power project and establishing the Columbia Valley Administration. At a later press conference he told newsmen that he would never agree to develop St. Lawrence power as a separate program; it's all or nothing with him on that river. He also explained that his New England reference was meant to include the comatose Passamaquoddy project. Further, he told the correspondents, he looks forward to eventual development of

---

The public low-rent housing program will begin to make itself felt in the construction market within six months, according to estimates in the budget for the Public Housing Administration. The program, enacted last year, authorized construction of 810,000 locally owned dwelling units in six years. PHA expects 100 projects with 50,000 units to be under construction by June 30, 1950. An additional 125,000 units should be started during the following twelve months, PHA says, and 70,000 should have reached the occupancy stage by the end of June 1951. A total of 175,000 units put under contract in the next 18 months would represent at least $1.5 billion of construction business.

As budgeted for fiscal '51, the largest civil works expenditures would be by the Corps of Engineers: $534 million for flood control, $161 million for navigation works. Additionally, the Army would get $97 million for veteran's hospitals. The Veterans Administration itself would spend $157 million on the hospital program. The Corps of Engineers also would have charge of nearly all of $88,000,000 of construction for the Army and $52,000,000 for the Air Force. The Navy's public works expenditures would amount to $72,000,000.

Biggest project allotments on the Army Engineers' list go to McNary Dam, $45,000,000, and Chief Joseph Dam, $17,500,000, both on the Columbia River; Fort Randall and Garrison Reservoirs on the Missouri, at $37,500,000 and $35,000,000; Buggs Island Dam, N. C., $30,000,000; Wolf Creek Dam, Ky., and Clark Hill Dam, Ga., at $22,000,000 each; Detroit Dam, Ore., $20,000,000; and Bull Shoals Dam, Ark., and Harlan County Dam, Neb., at $18,000,000 each.

Reclamation gets a $354 million in the budget, up $47,000,000 from 1950. Most of the money would go to five programs or projects: Missouri River Basin, $102 million; Central Valley, Calif., $49,500,000; Hungry Horse Dam, Mont., $30,500,000; Columbia Basin, Wash., $53,500,000; and Colorado-Big Thompson, $21,700,000.

power on the Ohio and upper Mississippi watersheds, to be combined with the Missouri valley into a grandiose new "Central Valley" project for the United States.

For both hydroelectric and irrigation projects, the President told Congress "we must continue policies to assure that their benefits will be spread among the many and not restricted to a favored few." His words re-emphasized his support for acreage limitations on reclamation projects and for customer preferences to co-ops and municipalities in buying public power.

In his address to both houses on the state of the union, Truman showed that he was ready to sign the National Science Foundation bill. He urged his hearers to complete action on the measure, already passed by the Senate.

Asks housing help

Housing got less attention than expected in the state of the union message. To aid middle-income families, the President recommended only that Congress pass legislation to help co-operatives and other non-profit groups.

His economic message was more explicit on housing needs. "Further methods," he said, "must be found to enlarge the flow of private capital into housing." To supplement the public housing law enacted last year, he called on Congress for a "new program to stimulate the flow of low-cost private money into the development of middle-income housing, mainly through cooperative and other non-profit ventures."

An administration bill embodying his recommendations was ready for introduction in Congress at the end of last week. Need for quick passage of a new law was urgent, if the nation was to maintain or surpass its 1949 record of more than 1,000,000 dwelling units started in one year. The administration wants to let the emergency 608 section (of the National Housing Act) die on March 1. Section 608 has produced the rash of apartment projects that have sprung up throughout the country, nearly all of them in the higher-rent brackets.

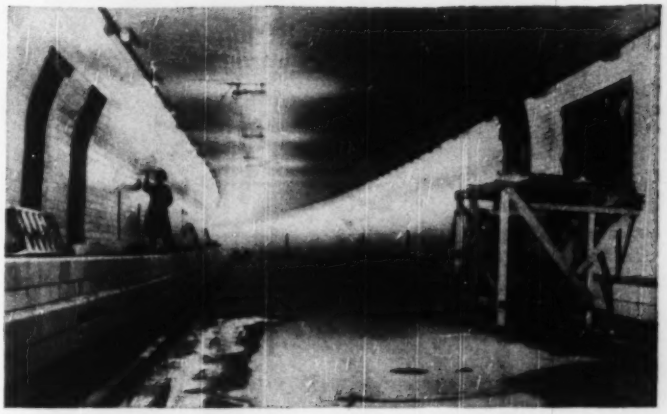
Seek private capital

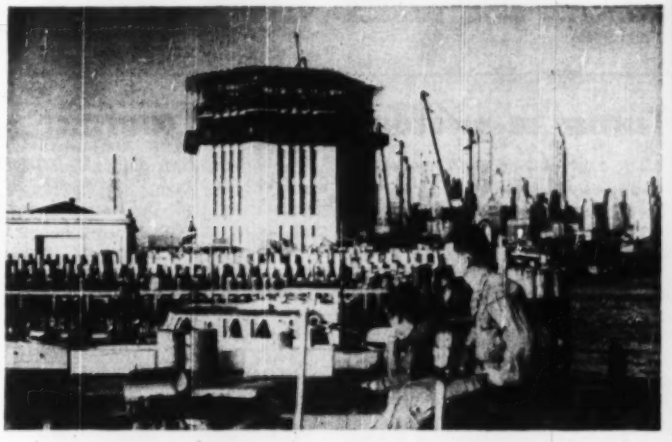
Financing of housing got a more specific prescription in the annual economic review (of the Council of Economic Advisers) that the President sent to Congress with his message. The Council, reduced to two members since the resignation of former Chairman Edwin G. Nourse, said that government credit must be placed —directly or indirectly—in back of private ventures that will build co-op or nonprofit dwellings. The economic advisers also said that mortgage insurance provisions of the Federal Housing Administration will be liberalized to encourage building of homes—with an adequate number of bedrooms—at lower rents and lower sales prices.

The two-man council made a more moderate estimate of what future housing volume should be than that presented by Acting Chairman Keyserling at Boston eight weeks ago (ENR, Nov. 24, p. 23). In the annual review submitted to Congress, the economists said that housing production should be stabilized at 1,500,000 new units annually—requiring an average investment of $12 or $14 billion per year. They stressed that this estimate is not a forecast; it represents a level that can be reached only by special efforts.

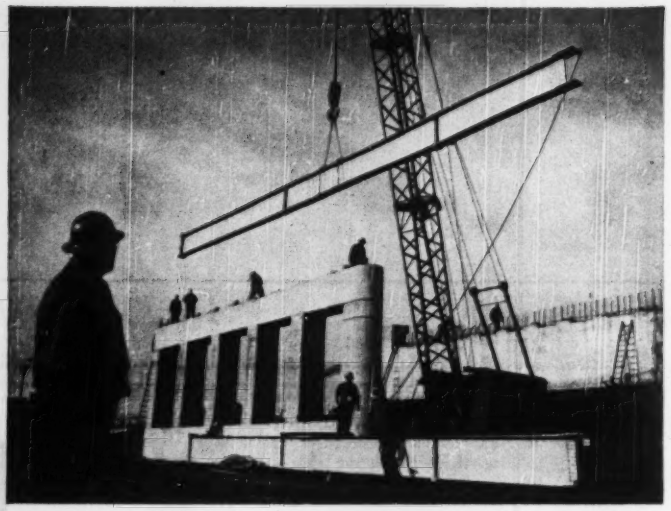
The deflated Point 4 program received only kind words—but no real assistance—from either the President or his economic advisers. Truman wants Congress to pass his modest request of last year for $40,000,000 for technical aid, along with export-import bank guarantees of investments in foreign lands. The guarantees are useless without prerequisite treaties that sovereign nations are unwilling to negotiate.

Both the President's messages were couched in smooth, non-irritating language designed to woo the independent voter in an election year. The same sort of writing was evident in the annual review of the economic council. One week earlier, the economists had offered a foretaste of the diplomatic approach in their fourth annual report to the President. One had to look behind the soft words to find the big stick that the administration still plans to use if needed.





MILES OF TILES—Longest vehicular tunnel in the United States—at 9,117 ft.—New York City's Brooklyn-Battery tunnel is nearing completion. Above, workmen are installing some of the 780,000 sq. ft. of tile in the $80,000,000 tube which will link lower Manhattan and Brooklyn when it is opened next summer. Below, two Governors Island (Fort Jay) GI's watch construction on a ventilator adjacent to the island. (Above, Acme Photo. Below, Wide World Photo.)



TURNPIKE MOVES EAST—Pennsylvania Turnpike's Eastern Extension will cross the Susquehanna River near Highspire. Workmen here place the first 5½-ton steel girder of the $5,000,000 structure. The mile-long bridge will be the road's longest. (Wide World Photo.)

Turner re-awarded disputed contract

The Port of New York Authority has re-awarded a $9,194,759 contract for its consolidated New York City bus terminal to the Turner Construction Co.

The second award was made necessary by a veto which Governor Dewey, of New York, and Driscoll, of New Jersey, issued on the original award, then withdrew. They requested and got an expansion of the authority's record showing why the bid went to Turner instead of to Merritt-Chapman & Scott Corp., which was low bidder at $8,937,892 (ENR Dec. 22, p. 23). In withdrawing their veto, the governors stated that they "took no part in the decision."

The re-award drew from Adm. Carl H. Cotter, president of Merritt-Chapman & Scott, the comment that:

"If the Port Authority did not intend to award the contract to Merritt-Chapman & Scott in the event this corporation was the low bidder, it should not have made plans and specifications available to it for bidding. In other words, the Port Authority could have and should have prequalified proposed bidders.

"It is my considered opinion that the action of the authority has resulted in an unwarranted increase in cost of over $250,000 and, in the long run, is destructive to the system of competitive bidding in public works, and not in the public interest."

The authority based its award primarily on the compelling necessity for insuring that the terminal be ready for use at a specific hour. Failure to meet so precise a deadline could disorganize heavy commuter travel and subject the authority to large damage suits. So its amended record said, in part:

"The Turner Construction Company's experience (is) from the construction of approximately 490 buildings in New York City, which would cost at today's prices in excess of $375,000,000.

"That Merritt-Chapman & Scott is an outstanding contractor in the field of waterfront and subaqueous construction, but to the best of the information of the (PNYA's) board of engineering consultants and of the (authority's) engineering staff has done no building construction in New York City other than marine and waterfront construction."

Cotter dismissed this comment with the assertion:

"Merritt-Chapman & Scott Corp. now has $35,000,000 worth of building construction alone on its books, with $30,000,000 worth in an advanced stage of completion, including the $18,000,000 Veterans Hospital at Peekskill, a veterans hospital at Wilkes-Barre, Pa., a hospital for the state of New York at Poughkeepsie, a large garden apartment housing project for the Atomic Energy Commission at Oak Ridge, and an industrial plant for the Camp Manufacturing Co., at Franklin, Va. Over the years, Merritt-Chapman & Scott Corp. has completed many millions of dollars of such construction. It has never failed to complete any project it has undertaken, and never been disqualified on any job. Its record of labor relations, in New York City and elsewhere, has been eminently satisfactory.

"In the light of the extensive experience of Merritt-Chapman & Scott in building construction throughout the world, this (lack of New York City work) is irrelevant."

Adm. Cotter emphasized that the company's record of building work accomplished was presented in detail to the commissioners of the Port Authority, and that representatives of the Port Authority had visited the company's jobs at Wilkes Barre, Peekskill and Poughkeepsie. Asserting that these visits were made after the original decision to award the contract to the second low bidder, Cotter declared "it is inconceivable that the board of consulting engineers would submit an adverse recommendation to the Port Authority without first making the investigation of the qualifications of the lowest bidder."

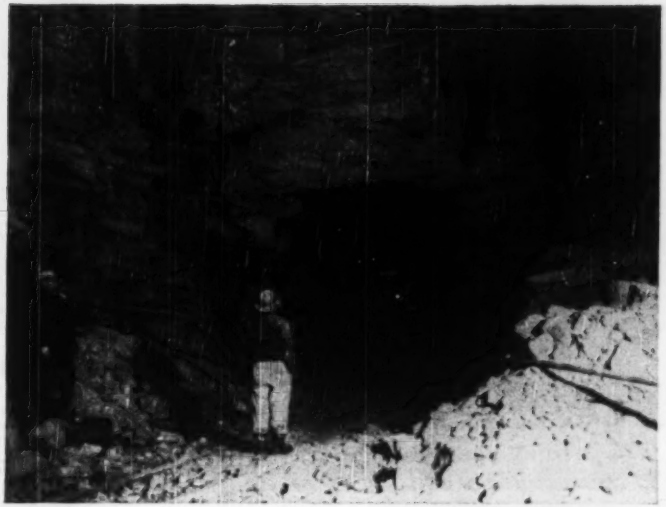
No record is available of what the investigators concluded from their inspections, but inquiry in Washington from the Army Engineers and the Veterans Administration reveals that the Wilkes Barre hospital job was 73.6 percent complete Nov. 30 as compared with 73 percent scheduled, and that the Peekskill job was 95 percent complete Nov. 30 with completion called for by March, 1950.

Private group seeks St. Lawrence permit

The Federal Power Commission has received an application from a New Jersey corporation for a permit to develop power resources and seaway facilities of the St. Lawrence River in the International Rapids section, near Massena, N. Y.

The application was filed by the Public Power and Water Corporation of Trenton, N. J. It contemplates construction of a concrete dam from the U. S. to Canadian shores near Barnhart Island; a 2,200,000 hp. power installation at Barnhart Island; a concrete control dam near Rockway Point, N. Y.; and a 30-ft channel development. Protests or requests for action must be filed with Federal Power Commission before Jan. 31.

FPC recently turned down an application for a similar development by the New York State Power Authority.



A LONG WAY TO GO—Portal of the 25-mi. tunnel which will connect Pepacton and Rondout Reservoirs, part of the New York City water supply project now under construction on the upper reaches of the Delaware River, is shown in this Binghamton (N. Y.) Press picture. The tunnel will be 11 ft. 4 in. in dia. Seventy ft. daily is considered good progress. (Wide World Photo.)

NYC gets Stage 3 plans for Delaware along with Hudson pumping scheme

Board of Water Supply packages $140 million request for reservoir at Cannonsville with $5 million needed for emergency service

New York City's Board of Water Supply set plans for Stage 3 of its Delaware system before a receptive Board of Estimate recently while asking funds for emergency pumping from the Hudson River. This maneuver brought the total BWS request to $145 million—$5,000,000 for pumping now and $140 million over the next ten years.

Stage 3 would dam the Delaware River's West Branch near Cannonsville, N.Y., and feed 323 mgd. through a 44-mile tunnel under the Delaware-Hudson divide to Rondout Reservoir, present terminus of the Delaware Aqueduct.

The purpose of Stage 3 is to provide for the 1960 water demand of New York City and the Westchester County communities it supplies. Stage 2 (now under construction, including Rondout, Neversink and Pepacton reservoirs with tunnels connecting the second two with the first) is to be finished by 1955 but will satisfy demand for only five years (ENR Dec. 22, p. 26).

Just how this new proposal to build at Cannonsville will fit into the integrated plan for full development of the Delaware, being planned by the Interstate Commission on the Delaware River Basin, will be seen later this month. INCODEL is due to receive and make public some time after Jan. 15 the preliminary report of consultants, Malcolm Pirnie Engineers, of New York City, and Albright and Friel, Inc., Philadelphia.

In presenting Stage 3 plans to the Board of Estimate, Irving V. A. Huie, president of BWS, indicated his belief that INCODEL's plan will include a reservoir at Cannonsville. He recommended that New York City go ahead with this Stage 3 now and turn it over to INCODEL when the four-stage water supply project becomes reality.

Broken down into its two major parts, the $140 million estimate for Stage 3 includes $59,000,000 for the reservoir and $81,000,000 for the 10-ft.-dia. delivery tunnel. If the Board of Estimate approves the plan, financing probably will be through bond issue. But first, approval of the State Water Power and Control Commission also must be had.

To relieve water-short conditions between now and completion of Stage 2 in 1955, Commissioner Huie announced BWS will apply to the Supreme Court of the United States for amendment of the 1931 decree limiting the city to 440 mgd. from the Delaware watershed. Support of New Jersey and Pennsylvania is presumably to be sought in this application.

Hudson pumping

Although overshadowed by the Stage 3 announcement, the $5,000,000 to install a pumping station on the Hudson is more pressing.

BWS has submitted to contractors a brief outline of its proposal to pump water from the river into shaft 6 of the Delaware aqueduct at Chelsea, N.Y. This installation must include an electrically operated pumping plant to deliver 100 mgd. under a head of 575 ft., plus a complete plant for super-chlorination of the water.

Lump sum proposals for furnishing and installing complete plant are sought. It is hoped a contract can be let as soon as possible after approval of Board of Estimate and State Water Power and Control Commission is obtained. Both bodies are holding public hearings this week.

Speed in completion of the river intake and pumping plant is of prime importance and the proposal offering earliest completion may get the job. While hoping for August, 1950, completion, board engineers are somewhat dubious. They are thinking in terms of a river intake some 500 ft. off-shore and 40 to 50 ft. under the surface. Although convinced the Hudson tapping is strictly an emergency measure, they would consider anything less than a permanent job wasteful.

As yet no proposals received by BWS have been announced, although one undisclosed interested party has offered to do the job in seven months. Officials feel that most contractors are waiting until the scheme has full approval before entering proposals.

Ohio tests tax exemption for new federal housing

Federal public housing spending in Ohio is stalled pending a determination by the state supreme court of whether all property of a housing authority will be exempt from taxes.

Suit was filed by Cincinnati's Housing Authority, to test a new law which authorizes waiving of state and local taxes on projects built under the national program. Previously, the court had ruled that the Ohio constitution forbids waiving of certain taxes.

Recently, the authority got federal approval of a $200,000 loan for planning of Cincinnati homes—the first such contract in Ohio. The contract will be inactive pending the test suit.

Utah NLRB election tangles labor outlook

Machinist victory over AFL unit hits joint disputes board, affects AGC-ARBA dispute on representation votes

The construction industry's outstanding current labor problem—whether and how to hold representation elections—was back in the news this week, with complications.

It got there as a result of an NLRB election among employes of the Strong Co., Springville, Utah contractor. The unaffiliated International Association of Machinists defeated the AFL Operating Engineers for jurisdiction over welders, mechanics and helpers in Strong's repair yard. The vote brought these complications:

1. It endangered the effectiveness of the joint jurisdictional disputes machinery (ENR Oct. 20, p. 23) since that board has no jurisdiction over non-AFL unions.

2. It gives contractors an indication of the possible results of NLRB's precedent-making decision (ENR Nov. 3, p. 15) to take jurisdiction over certain construction workers under certain circumstances. That decision also involved the Strong Co., and was based on NLRB's determination that work on U. S. highways (Strong builds them) is "essential to commerce."

3. It indicates the possiblities for inter-union conflict over construction workers where representation elections are held. As such, it may become a factor in the controversy between the Associated General Contractors, which wants no elections, and the American Road Builders' Association, which wants no exemption from such elections. (ENR Jan. 5, p. 32).

4. It emphasizes the running jurisdictional feud between the Operating Engineers and the Machinists on construction jobs. And it emphasizes why IAM joins ARBA in opposing the policy of exempting construction workers from elections.

A dispute similar to this—at the Hanford atomic plant—precipitated the case which resulted in NLRB's announcement of the policy of exempting construction workers from elections, (ENR Dec. 22, p. 23).

J. E. Warnock dead at 46; USBR hydraulics expert

Jacob E. Warnock, head of the Reclamation Bureau's Denver Hydraulic Laboratory, died suddenly at Denver late last month. He was 46, and was widely recognized as expert in hydraulic engineering.

A native of Indiana, he was graduated with a B.S. in C.E. by Purdue University in 1925. In 1934, he received a professional degree in civil engineering from Purdue, and in 1939, an M.S. in this field from the University of Colorado. His career began with service under the Army Engineers at Chattanooga, Nashville and Huntington, from 1925 until 1929. After two years with the Aluminum Company of America, he joined the Bureau in 1931. Soon thereafter, he became head of the hydraulic laboratory which he headed until his death.

Warnock was a member of the International Association for Hydraulic Structures Research and very active in the American Society of Civil Engineers. He had been secretary-treasurer, vice president and president of his local section of ASCE.

C. I. Sterling appointed to chief engineer post

Clarence I. Sterling, Jr., has been named chief engineer and deputy commissioner of the Massachusetts Public Health Department. He succeeds Arthur D. Weston, who retired after a lengthy service.

Sterling joined the department after being graduated in civil engineering at Lafayette College, and studied later at Cincinnati on a Rockefeller Foundation fellowship. In 1934, he became Western Massachusetts district engineer and served as sanitary engineer for a four-state study of the Connecticut, Hoosic and Housatonic Rivers. He supervised sanitation and relief work in the 1936 Connecticut River flood and the 1938 hurricane.

In 1942, Sterling became chief sanitary engineer with the Institute of Inter-American Affairs, and handled health, sanitation, water and sewerage problems in Chile and Uruguay. In 1945, he returned to Washington as chief engineer and associate director of the institute's health and sanitation division. Later, he was acting president of the institute, and he is now president of the Inter-American Association of Sanitary Engineering.

RFC ok's toll road revenue bond financing

Transaction seen testing prospects for further financing of public works which produce revenue

Reconstruction Finance Corp. will make a loan for a toll highway in Oklahoma. It views the transaction as a guinea pig to test financing further revenue-producing public works.

It is now certain that RFC will underwrite construction of the high-speed turnpike between Tulsa and Oklahoma City—something under 100 miles long. The proposal has President Truman's backing.

The loan will be in the neighborhood of $30,000,000. Estimates of the turnpike's cost are from $33- to $38,000,000.

Here's how the financing will be handled: The Oklahoma Turnpike Authority, authorized by the legislature, will give RFC tax-exempt bonds in return for the loan. Once the highway is completed and traffic begins to yield tolls, RFC will start disposing of the bonds to private investors. The loan will be for 40 years at 4 percent.

RFC has decided the toll road meets its requirement that an enterprise seeking a loan be a sound risk, able to repay. And RFC required a report from an outside engineering firm to rule on the repayment prospects. The firm of Howard, Needles, Tammen and Bergendoff made the report.

Gov. Roy Turner, of Oklahoma, father of the turnpike there, is coming to Washington to complete the deal. Construction will probably start late in this year. The superhighway will be built in sections, with several contractors participating.

The toll road will be watched carefully, to see whether RFC may not be able to participate in similar projects—say improvement and expansion of water works, improvement of electric power systems, construction of public buildings.

Administration Democrats say that such activity would be good hedge against unemployment—such projects could take up any slack in work. (The Pennsylvania Turnpike was started during the depression with a PWA grant.)

Two years ago, Turner tried to get the Public Roads Administration to let federal-aid funds be used to help finance the turnpike. He was turned down because federal highway aid can participate only in free roads.

HAND SHOVELS TAKE OVER—Final clean-up of small rock at the foundation site of North Dam, on the Columbia Basin irrigation project, Washington, is a hand loading job. In the background is a trench for a cut-off wall. Dam is being built about two mi. from Grand Coulee to form northerly barrier for a 27-mi. equalizing reservoir. It will be 1,400 ft. long, 150 ft. above lowest point shown here. South Dam, at the other end of the coulee, is finished. Water will be pumped into the reservoir for irrigation purposes in 1951. North Dam is being built by J. A. Tertling & Sons, the general contractor.

Truman names commission to study water resources plans and policy

Duties assigned new group closely parallel recommendation of Hoover Commission made earlier this year

Assignments paralleling those recommended last year by the Hoover Commission were given a temporary Water Resources Commission set up last week by President Truman.

In establishing the seven-member board by executive order—to be supported by unassigned Presidential funds—Mr. Truman used one stone to kill these birds:

1. At least partially implemented Hoover Commission policy recommendations relating to water resources, which have languished since the reports were made almost a year ago (ENR March 17, 1949, p. 69, March 24, p. 9).

2. Laid the groundwork for effective counter moves in Congress against Republican attempts to capitalize on New York City's water shortage by sponsoring legislation to authorize a water resources study such as has already been proposed by Senator Irving M. Ives.

3. Provided a Washington job for Leland Olds, former member of the Federal Power Commission. Olds' confirmation to another term was denied last year even though the President specifically made it a party loyalty issue. Olds is a member of the new group.

Specific assignments of the new board, as set forth in the executive order, include these:

"The commission shall give consideration in particular to (a) the extent and character of federal government participation in major water-resources programs; (b) an appraisal of the priority of water-resources programs; (c) criteria and standards for evaluating the feasibility of water resources projects; and (d) desirable legislation or changes in existing legislation relating to the development, utilization and conservation of water resources."

Hoover Commission counterparts to these assignments are found in its report on the Interior Department. Primarily responsible for the similarity is a Hoover Commission recommendation that a "Board of Impartial Analysis" be established in the President's office. Matching point (a) of the new board's duties was an assignment for the impartial analysts to give Congress an overall grasp of the government's major construction activities, much of them concerned with water development. Matching point (b) was the analysts' duty to eliminate disastrous conflicts and overlaps that cost enormous sums annually. Matching point (c) was the primary function of the Board of Impartial Analysis itself—to determine feasibility of proposed resource development proposals. And matching point (d) of the new board's work was the Hoover Commission's assignment—to study desirable changes and to recommend which, if any, should be made.

Mr. Truman paid no attention specifically, to New York's water supply troubles, and it is known that Presidential attention to the problems for which he created the new commission substantially antedated the crisis stage of New York's problem.

Heading the new commission will be Morris L. Cooke, Philadelphia engineer. Other members in addition to Leland Olds, will be:

R. R. Renne, president of Montana State College.

Lewis W. Jones, president of the University of Arkansas.

Gilbert White, president of Haverford College.

Samuel B. Morris, general manager and chief engineer of the Los Angeles Department of Water and Power.

Paul S. Burgess, dean of the college of agriculture, University of Arizona.

In a letter to Cooke, Mr. Truman said that the existing substantial federal investment in water development is growing by about $1 billion yearly. This makes it urgent, the President went on, that individual projects be coordinated properly with the overall program. He went on to say that:

"It is even more important, however, that the policies underlying these programs be soundly conceived in terms of national needs and objectives, and that they are adopted in the light of our goal of a stable and expanding national economy."

Dam done a year early

Reclamation Bureau's Heart Butte Dam, on the Heart River in North Dakota has been finished almost a year ahead of schedule. C. F. Lytle Co., and Green Construction Co., of Des Moines, Iowa, were the contractors. It's the second major dam in the bureau's program for the Missouri River Basin. Pumping plant and irrigation canal construction begins this spring.

CONSTRUCTION BUSINESS

New construction money breaks peacetime record

New capital for construction purposes totaled $7.3 billion for the year 1949. This broke all previous peacetime records. It further supports the forecast of a banner year for 1950 in engineering construction (ENR Jan. 5, p. 29).

The $3 billion realized from state and municipal bond sales in 1949 exceeded the previous year by 50 percent. Federal appropriations of $1.7 billion were 12 percent greater than the amount voted by Congress in 1948 (for fiscal 1949). Federal aid to highways, at $385 million, was off slightly from the preceding year. Corporate security issues for plant expansion were off 20 percent in 1949 from 1948.

The most important development during the year in construction financing was the unprecedented volume of state and municipal bond issues for local improvements—schools, housing, hospitals. State and municipal finances are in excellent shape, and experts see this rising trend in public financing continuing during 1950.

Construction money from corporate security issues declined 20 percent in 1949 from the all time high of $2.7 billion in 1948. The 1949 total of $2.2 billions from this source, however, is the second highest year on record.

New Capital for Construction
Millions of dollars

	1949	% chge	1948	1947
NON-FEDERAL				
Corporate	$2,170	−20	$2,701	$1,641
State & Mun.	3,041	+50	2,034	1,178
Fed.-Aid Hwys.	385	−10	427	248
U. S. Bldg. Loan	...	...	65	...
FEDERAL	$1,748	+12	$1,559	$ 819
Total Capital	**$7,344**	**+ 8**	**$6,786**	**$3,886**

Building costs stay steady

The Aberthaw index of cost of industrial building holds at 307.3 for December 1949, the same as its September value, 1914 = 100. This compares with its record high value of 327 set in September, 1948, and with 323.4 in December 1948. It came down to 319 in March 1949 and to 312.5 in June before levelling off at 307.3 in September and December. The average for 1949 is 311.5 compared with 328.4 in 1948.

For November 1949 the E. H. Boeckh cost index of brick and concrete commercial and factory building holds at 244.2 for New York City (1926-100) the same as for October but up 0.3 point from the low for the year reported in July. The national average is 211.4 for November, up 0.3 points from October and 2.1 points from the year's low, 209.3 reported for May.

The Austin Company's quarterly index of industrial building costs remained fixed at 161 (1926 = 100) at the year's end, despite the recent advance in steel prices. George A. Bryant, president of the firm, said the steel industry's rapid recovery from the effects of the strike has prevented a serious delay in obtaining materials.

Nominal advances in certain materials prices and in some labor rates may be offset by savings through improved labor efficiency and more rapid completion of work under contract, according to the Austin Company.

Multifamily housing shows 68 percent rise

While permits to build new urban dwelling units increased 9 percent as a whole in the first 10 months of 1949 over the previous year, multifamily housing units increased 68 percent in number of units, 72 percent in dollar value as reported by the Bureau of Labor statistics.

This increase was distributed unequally geographically with a large increase in the East and a decrease in the West.

New Urban Dwelling Units Authorized

	First 10 months of 1949	1948	% chge.
New England	27,625	24,944	+11
Middle Atlantic	102,801	72,183	+42
East N. Central	87,413	76,175	+15
West N. Central	35,152	32,611	+8
South Atlantic	70,823	61,345	+15
East S. Central	25,799	20,122	+28
West S. Central	60,713	64,204	−5
Mountain	19,594	18,335	+7
Pacific	77,904	97,775	−20
Total units	**507,824**	**467,694**	**+9**
Multifamily Dwellings			
New England	6,688	3,400	+98
Middle Atlantic	62,071	25,271	+145
East N. Central	10,136	4,305	+135
West N. Central	7,118	3,068	+130
South Atlantic	24,072	13,972	+71
East S. Central	6,265	2,100	+200
West S. Central	6,598	7,678	−14
Mountain	1,323	1,590	−17
Pacific	19,952	24,171	−17
Tot. mul'fam. units	144,223	85,555	+68

Construction backlog tops $47 billion

The ENR measured backlog of proposed construction totals $47,266,401,000 at the end of 1949—a rise of $4 billion during the year.

The public works backlog, now at $32 billion, rose $2 billion during the year; proposed private construction also rose by $2 billion to reach $15 billion. The $4 billion rise is largely in five classes of construction, public buildings, $1,200 million; private unclassified, $800 million; commercial buildings, $700 million; industrial buildings, $500 million; streets and roads, $500.

The score, as the new year starts is:

Waterworks	$1,198,975,000
Sewerage	2,132,443,000
Bridges	1,521,003,000
Streets and roads	7,450,103,000
Earthwork, waterways	4,555,996,000
Unclassified	9,337,352,000
Public buildings	10,868,500,000
Commercial buildings	5,779,522,000
Industrial buildings	4,422,507,000
Total	**$47,266,401,000**

Building trades in Akron to ask cash not welfare

Because of difficulties of administering pensions for construction labor AFL building trades unions in Akron have announced they will seek outright wage increases when their new contracts come up in March and April. They figure pensions cost mass production companies 6 to 15 cents per hour per worker. They plan to submit their requests to contractors in February.

Missing detail almost loses highway contract

Failure to itemize one minor phase of work on the contract for an Alaskan Way viaduct in Seattle made it necessary for MacRae Brothers of Seattle, Washington, to go to court to secure consideration of its $1,193,912 low bid to build the first unit. The State Highway Department rejected the proposal as irregular because the firm's proposal failed to itemize a $35,280 phase of the overall project. The correct amount, however, was included in the bid total, so no change was involved there.

Judge John M. Wilson of Thurston County Superior Court at Olympia ordered the State Highway Department to consider the bid, with the provision that the item omitted from the original bid be inserted.

Close bidding at Tucson

A low bid of $1,104,290 on the 12-mgd activated sludge sewage treatment plant for Tucson, Arizona is only $70,000 under the high of eleven bidders. It is only $400 under the second low bid. Two bidders were only $1.48 apart on this million dollar job. Headman, Gerguson & Carollo, Phoenix, are engineers, M. M. Sundt Construction Co., Tuscon, the low bidder, was awarded contract January 3.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 65, went to press.)

Steam Generating Plant—Central Power Electric Co-operative, Carrington, N. D., plans 45,000-kw steam generating plant to cost $8,521,000.

Pier—Department of Marine & Aviation, City of New York, plans new Pier 57 at 15th St. and North River, Manhattan, to cost $5,000,000 to $6,000,000. Madigan-Hyland, Long Island City, N. Y., are consulting engineers for the project.

Tecolote Tunnel and Access Road—Carl M. Halvorson, Inc., and H. Halvorson, Inc., Portland, Ore., were low bidders on all schedules for constructing Tecolote Tunnel and Access Road, Santa Barbara Project, California. Their bid on Schedule 3, the entire project, was $4,750,455.

Pier—Baltimore & Ohio Railroad Co., Baltimore, Md., plans constructing $5,000,000 ore-loading pier at Curtis Bay, near Baltimore. Orders have been placed for most of material.

Roads and Bridges—Pennsylvania Turnpike Commission, Harrisburg, Pa., received low bid from Ralph Myers Contracting Co., Salem, Ind., at $3,068,110 for improving Section 31D, Western Extension Pennsylvania Turnpike, Allegheny and Westmoreland Counties. The Pavia Co., Verona, Pa., bid $1,398,904 for Sec. 31E of same project. R. B. Stone, Harrisburg, is engineer for Turnpike Commission.

Hospital—Plans and specifications will be ready about the middle of February and bids will be taken about 30 days after by the U. S. Atomic Energy Commission, Los Alamos, N. M., for hospital to cost from $2,000,000 to $3,000,000, at Los Alamos.

Electric Power System—Central Power & Light Co., Corpus Christi, Tex., plans system improvements, including changing from poles to underground cables, to cost about $3,600,000 in the Corpus Christi, Tex., area.

Water Pipeline—Waterworks Board, City of Mobile, Ala., awarded contract for pipeline from Big Creek to industrial area of Mobile to Lock Joint Pipe Co., East Orange, N. J., at $2,007,771. The contractor plans to build a plant at Mobile to manufacture the pipe. J. B. Converse & Co., are consulting engineers.

Steel Towers—American Bridge Co., Pittsburgh, Pa., has been awarded contract at $2,296,758 for steel towers at Maupin, Metolius and The Dalles, in Oregon, and Goldendale, Hanford, Beverly and Coulee City, in Washington, by the Bonneville Power Administration, Portland, Ore.

Delta-Mendota Canal—United Concrete Pipe Corp. and Vinnell Co., Inc., Alhambra, Calif., were low bidders at $3,967,484 when Bureau of Reclamation, Tracy, Calif., opened bids January 5 for earthwork and structures on Delta-Mendota Canal and Firebaugh Wasteway, Central Valley Project, Mercer County, Calif.

Hospital—St. Edwards Mercy Hospital, Fort Smith, Ark., plans remodeling hospital and constructing addition at about $2,000,000.

Schools—Jefferson Parish School Board District 1, Gretna, La., has scheduled an election, January 25, to vote on $2,000,000 bonds for constructing parish schools.

Housing—Willie Latourneau, c/o R. Chalifoux, Montreal, Que., will construct housing development at Ville St. Michael, Que., by day labor to cost about $2,000,000.

School—Tennessee State Board of Education, Nashville, Tenn., will take bids about February 15 for school building at State School for the Blind, at Nashville, Tenn. Estimated cost is $2,000,000. Marr & Holman, Nashville, are architects.

Office—American Automobile Insurance Co., St. Louis, Mo., plans constructing office building at St. Louis, to cost about $2,500,000. Russell, Crowell, Mullgardt & Schwartz, St. Louis, are architects. Otto E. Heimicke & Co., St. Louis, are structural engineers and Ferris & Hamig, St. Louis, are mechanical engineers. Present plans call for 5-story structure, with foundation to carry five additional stories to be added in the future.

Sewage Treatment Plant and Main Pumping Station—Town of Phillipsburg, N. J., will open bids February 15 for sewage treatment plant and main pumping station to cost about $1,100,000. William A. Goff, Inc., Philadelphia, Pa., is engineer.

Medical and Dental College Building—Daniel Construction Co., Birmingham, Ala., was lowest bidder for preclinical and dental school at Medical College of Alabama, Birmingham, at $1,286,000. Warren, Knight & Davis, Birmingham, are architects.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Jan. '50	484.74	233.01
Building Cost	Jan. '50	356.09	192.49
Volume	Dec. '49	310	136

Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

Week of Jan. 12	This Week 1950	Cumulative 1950 (2 wks.)	Cumulative 1949 (2 wks.)	% chge av.wk.
Federal	$17.1	$233.2	$48.8	+380
State & Mun.	69.7	122.5	103.3	+19
Total Public	$86.8	$355.7	$152.1	+134
Total Private	106.7	161.2	104.9	+54
U. S. Total	$193.5	$516.9	$257.0	+100

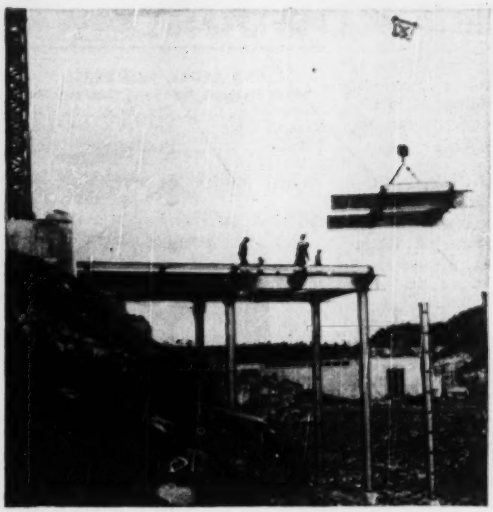
Contracts by type of work

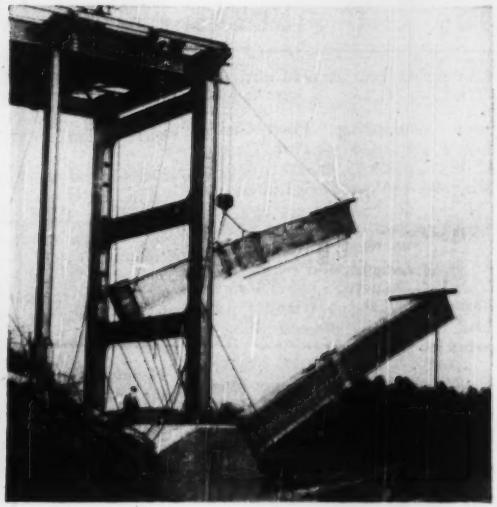
	This Week	Cumulative 1950 (2 wks.)	Cumulative 1949 (2 wks.)	% chge av.wk.
Waterworks	$16.4	$19.6	$6.5	+203
Sewerage	4.1	8.3	11.0	−25
Bridges	8.9	15.4	17.2	−10
Highways	19.3	34.9	28.5	+23
Earthwork, Waterways	9.4	10.8	41.6	−74
Buildings, Public	19.4	254.8	39.3	+550
Industrial	20.2	26.0	21.9	+19
Commercial	75.6	121.9	73.8	+65
Unclassified	20.2	25.2	17.3	+45

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

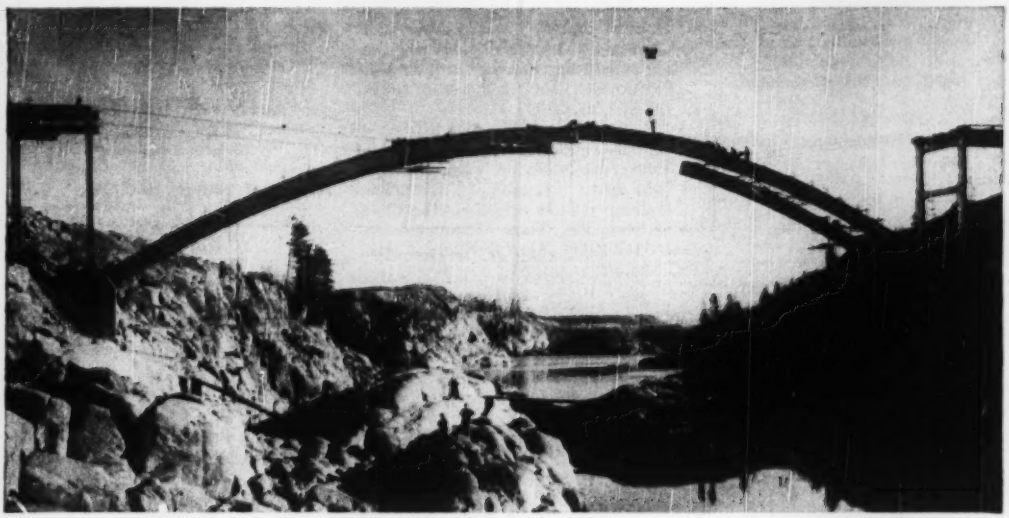
New capital for construction

	Cumulative 1950 (2 wks.)	Cumulative 1949 (2 wks.)	% chge av.wk.
NON-FEDERAL	$37.7	$47.2	−20
Corporate Securities	7.7	18.2	−58
State and Municipal	30.0	29.0	+3
Total Capital	$37.7	$47.2	−20





Approach flooring was set in 20-ft. units, and arch ribs were erected in units of 43 ft. . .



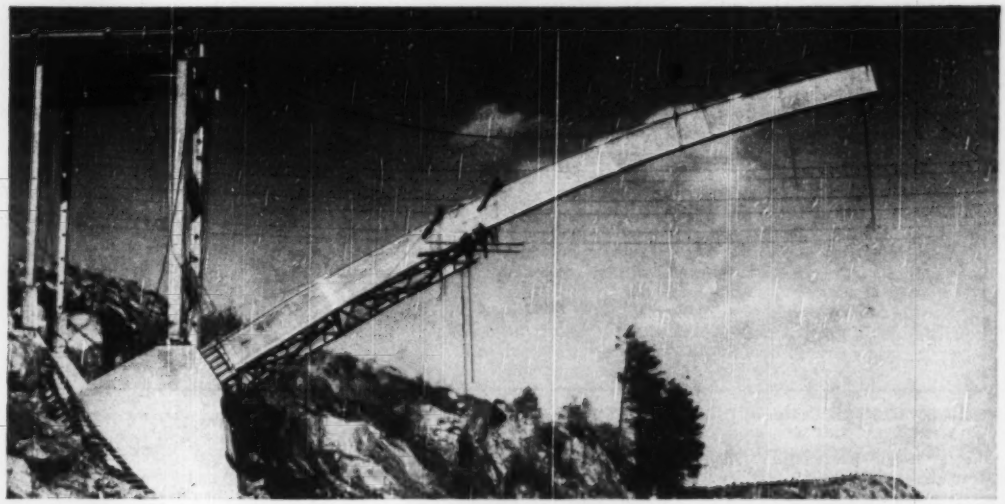
The Saguenay Is Bridged with Aluminum

SPRINGING out of the steep, rocky banks of the Saguenay in a graceful parabolic curve, two slender metal ribs span the 290-ft. width of the river near Arvida, Quebec. They are the world's first aluminum arches and are part of the world's first all-aluminum highway bridge.

The aluminum in the arch weighs only 200 tons, as compared with the 400 tons that the span would weigh if designed in steel.

Constructed by the cantilever method, with the long, lightweight sections placed from a cableway, the arch ribs were completed in two weeks. But it took more than three years of computation and experiment by many outstanding engineers to make this structure possible. (For an account of these studies, see "The Arvida Bridge", by C. J. Pimenoff, THE ENGINEERING JOURNAL, April, 1949).

Only two all-aluminum spans had been built previously and both were considerably shorter: a 100-ft. deck-girder railway span for the Massena Terminal Railroad at Massena, N. Y. (ENR Nov. 28, 1946, vol. p. 714) and a 90-ft. double-leaf bascule bridge



at the haunches, 65 ft. and 50 ft. at the center of the span from a cableway of 7-ton capacity

for both roalroad and highway use over the River Wear in England, in which steel rivets were used (ENR Dec. 16, 1948, p. 10). Much had to be learned about the handling of the metal, both in design and construction.

Site affected choice of arch

The new bridge is being built for the city of Arvida. It will shorten by 3 miles the route to Shipshaw Power House No. 2—a 1,000,000-hp. hydroelectric plant two miles north of the city center—which now can be reached only by using a 5-mile circuitous road. Because of the natural beauty of the site and the intention of the city to develop the south bank of the Saguenay opposite the powerhouse into a park, appearance was a major factor in the selection of an arch for the main span. And because foundation rock was right at the surface, an arch was the most economical.

The bridge is 504 ft. long. In addition to the arch, it has five 20-ft. continuous-girder approach spans at each end. It will carry a 24-ft. roadway and two 4-ft. sidewalks on a 1.034 percent grade over the south approach, a 4.125 percent grade over the north approach and a connecting vertical curve over the arch.

The structure was designed for a live load of two 20-ton trucks abreast, with 16-tons on the rear axle of each, plus 30 percent impact, or 80 psf. It was also checked for an alternative live load of a 50-ton transformer pulled by an 18-ton tractor. The sidewalk stringers and brackets were designed to carry the rear wheel of a 20-ton truck, plus impact, and the sidewalk load taken by the arch ribs was assumed to be 40 psf.

Aluminum alloys made by the Aluminum Company of Canada (Alcan) are used throughout. Plates consist of an alloy core faced on both sides with pure aluminum. For these, and for extruded shapes, alloy 26S-T was selected, mainly because of its high strength. For rivets, 16S-T was chosen for strength and ease of forming. For handrails, 65S-T was decided upon for durability. And for the ⅛-in. thick sheets used between the concrete deck and structural aluminum to prevent chemical attack, 2S, which is commercially pure aluminum, was chosen.

To prevent galvanic action, aluminum surfaces in contact with aluminum or steel are coated with a bituminous paint containing aluminum powder and 5 percent zinc chromate. Also, for the same reason, a ⅛-in. thick fibrous insulating material will be placed between the aluminum and the bronze sliding plates at the ends of the bridge.

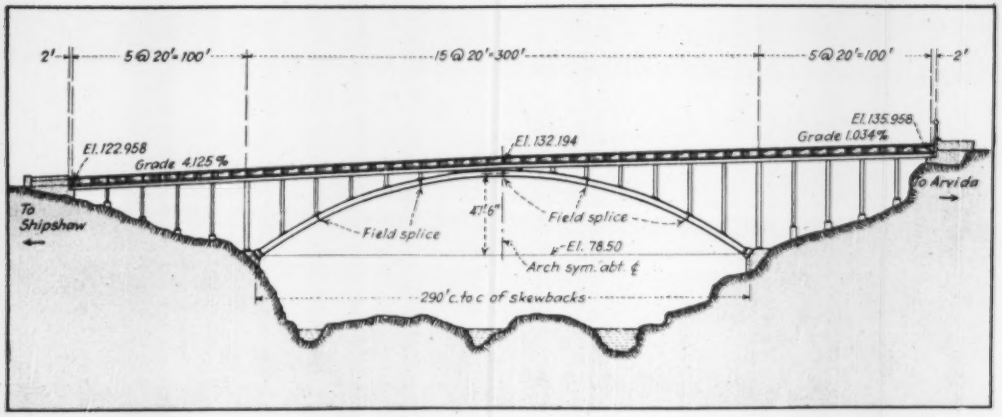
The allowable unit stresses assumed for 26 S-T were 21,000 psi. in tension, 12,500 psi. in shear and 30,000 psi. in bearing. For compression, this alloy was permitted the stresses given by the column formulas: $0.4\ (65{,}500 - 642\ KL/r)$ for KL/r equal to or less than 68, with a maximum of 21,000 psi., and $0.4 \times 102{,}000{,}000/(KL/r)^2$ for KL/r greater than 68. Depending on end conditions, K is a factor varying from 0.50 for both ends fixed to 1.00 for both ends free. Rivets were allowed 10,000 psi. in shear. In general, the designers were guided by L. S. Moisseiff's "Design Specifications for Bridges and Structures of Aluminum Alloy 27S-T," 1940 Edition.

Taking into account the probability of occurrence of various combinations of load, the designers applied the following factors to the normal allowable unit stresses: For the arch ribs, 0.9 for dead load plus live load, with an allowance of 0.1 for secondary stresses due to rib deflection; 1.15 for wind or temperature added to the preceding combination; and 1.40 for both wind and temperature added. For floor members and posts, unity for dead load plus one truck; 1.25 with two trucks or the alternative live load; and 1.50 for temperature added to the preceding combination.

The roadway slab was designed to take a wind load of 450 lb. per ft. as a continuous, horizontal beam, on rigid supports at the abutments and on elastic supports at the skewback bents and crown of the arch. In addition to the wind load thus received from the deck, the arch ribs and bracing were assumed to carry a wind load of 30 psf. on 1½ times their projected area.

Thermal stresses minimized

Two major problems were encountered when temperature effects were considered: (1) Since the coefficient of expansion of aluminum is twice that of concrete, the roadway slab and the aluminum structure will expand or contract different amounts for the same temperature change; (2)



THE ARVIDA BRIDGE is 504 ft. long, with a 290-ft. fixed-end parabolic arch forming the main span over the Saguenay River.

For a design temperature range of −40 to +100 deg. F., the deformations of the arch ribs will be large.

The first problem was solved by tying the deck to the ends of the longitudinal girders and inserting finger-plate expansion joints in the floor slab. It will also be anchored transversely at the ends of each floorbeam. The concrete deck will contain sufficient reinforcing steel to resist the resulting thermal stresses.

The second problem—that caused by temperature changes in the ribs—was minimized by designing for a variation of plus or minus 70 deg. from a fabricating temperature of 30 deg. F. This resulted in a reduction in stresses of 30 percent over those that would occur with an average fabricating temperature of 60 deg. F., as usually assumed. However, instead of being fabricated at 30 deg. F., the ribs were cambered to correct for the difference between actual and assumed fabricating temperatures, and will be free of thermal stresses at 30 deg. F.

New cold-driven rivets developed

To be assured of correct fit in the field, the fabricators assembled the arch span in the shop and then reamed the rivet holes to $\frac{7}{8}$-in. dia. A clearance of only $\frac{1}{16}$ in. was allowed for the cold-driven rivets, to be certain that they would fill the holes. The rivets are $\frac{7}{8}$-in. dia.

Where possible, shop rivets were driven under pneumatic pressure. Others, including all field rivets, were driven with the same type of pneumatic gun as usually used for $1\frac{1}{4}$-in. hot steel rivets. The technique adopted resulted from an invesigation carried out jointly by the Dominion Bridge Co. and Aluminum Laboratories, Ltd.

Also, a new type of rivet head was developed for the gun-driven rivets. These so-called "annular" head rivets have a manufactured head that is a modification of the usual button type. There is also a $\frac{1}{16}$-in. dia. hole extending $\frac{3}{8}$ in. into the other end. When the rivets are being driven, the hole, engaged by a nipple on the rivet snap, facilitates the spread of the metal to form the head.

Since cold driving with a pneumatic gun requires a longer driving time than hot driving, riveters had to be relieved more frequently. Erection riveting gangs consisted of four men: two riveters, who took turns at the gun, a backup man and a "stick-in" man. The rivets per gang per day averaged from 100 to 150, depending on their location and the amount of time lost in moving scaffolds.

Aluminum for the bridge was made at the Alcan Arvida Works. Shapes and light plates were produced in the Alcan plant at Kingston, Ont., and the heavier plates were rolled by the Aluminum Company of America in the U. S. The structular members were fabricated by the Dominion Bridge Co. at Lachine, Que., and shipped by rail to the site, where they were unloaded by a stiffleg derrick at the north abutment.

Cableway places bridge members

A cableway of 516-ft. span and 7-ton capacity was used to erect the bridge. The cableway tower at the north end consisted of two 20-ton, 90-ft. guy derrick booms, 27 ft. apart, topped with a 15-in. 158-lb. I-beam, with web horizontal. The south tower was similar, except that it was formed with the masts of the guy derricks. At both towers, the sliding saddle could be moved along the top beam by means of ropes operated by hand winches.

The cable was a $1\frac{3}{8}$-in. dia. wire rope. At each end, two tiebacks, each consisting of two $1\frac{1}{4}$-in. dia. wire ropes, designed to carry 100,000 lb., were anchored into rock.

First to be placed on the already prepared concrete foundations were the posts for the approach spans. Spaced 20 ft. apart longitudinally and 23 ft. transversely, these members consist of two 12x3½-in. channels, 10 in. back to back, and two 18x⅞-in. plates. End posts, being short, were provided with rocker bases, but the other posts rest on steel base plates. The floorbeams are seated on the posts and held by semi-rigid connections.

Three-tier rigid-frame bents were erected at each end of the arch to support the deck both vertically and laterally. All members of the bents are box members consisting of four 4x4x½-in. angles, two 32x⅜-in. web plates and two 18x½-in. flange plates, except that slightly lighter material is used for the top beams. The 32-in. plates are stiffened longitudinally with Z-bars.

Floor system pre-assembled

Prior to erection, the floor system was assembled at the site in 20-ft. lengths. Each section consisted of two longitudinal plate girders, spaced 23 ft. apart; two transverse floorbeams, 10 ft. on centers, plus two sidewalk brackets; a longitudinal stringer at the center of the structure and two sidewalk stringers. Single-angle diagonal bracing was placed in the plane of the bottom flanges of girders and floorbeams. The sections were picked up and placed as a single unit by the cableway hoist.

Then, the girders were spliced, to be continuous over the length of the bridge. Bearing stiffeners were placed over the posts, and they serve also as end connection angles for the floorbeams and sidewalk brackets. Intermediate stiffeners are not required.

The floorbeams have the same depth as the girders and are continuous with the sidewalk brackets. The top flanges are connected by steel T-straps with galvanized steel bolts. At midspan, the beams support 10-ft. long I-beams, which will participate with the girders and floorbeams in carrying the 8-in. thick, two-way reinforced concrete roadway slab. The brackets support the I-beams on which the outer edges of the sidewalks rest.

After the floor system for the approaches had been erected, the north spans were decked over temporarily with wood planks. Rails were placed for a truck that carried the arch rib sections to the end of the approach, where they could be picked up by the cableway hoist.

Arch erected by cantilever method

Forming the main span, the two fixed-end ribs, spaced 23 ft. on centers, are parabolic in shape and span the 290 ft. between abutments with a rise of 47 ft. 6 in. Each rib is a built-up box, with web plates stiffened at mid-height with longitudinal Z-bars and at 5-ft. 6-in. intervals with transverse stiffener frames composed of angles.

Fabricated to the correct curvature, including camber, the ribs are spliced at the crown and at each post, except the two on either side of the crown. A shop splice was made in each rib at the first post from the abutment to create haunch sections 43 ft. long, at the third and fourth posts to form intermediate sections about 65 ft. long, and at the sixth post to produce center sections 50 ft. long. The intermediate sections, each weighing 6 tons, were the heaviest load to be carried by the cableway.

First step in erecting the arch was the placing of the four haunch sections of the ribs. These were cantilevered from the abutment, held in place by the anchor bolts. Then, the lattice-girder, K-system bracing was inserted.

Next, the four intermediate sections were erected, the splice being bolted and pinned 50 percent. One drift pin was used for every six erection bolts. Each section was supported by the cableway until a tieback could be connected at the free end and drawn tight. As the cableway fall was slowly released, the load was taken up on the tieback. Then, the cross bracing was placed and the splices with the haunch sections riveted.

In the final stages of the operation, the two center sections on the north side of the crown were cantilevered out and braced. The tieback to the intermediate section was taken up to support the added load and to raise the free end of the center sections slightly to enable the south center sections to be inserted.

Of the last two sections, the downstream one was inserted first, leaving a gap of only 1¼ in. at the bottom flange and 1½ in. at the top flange. The two downstream tiebacks were then slackened slightly until the rib was touching at the bottom flange, with only ⅛ in. gap at the top. The ribs were brought to full bearing by tightening bolts on top-flange draw angles, which were removed later after the flange splices were riveted. The upstream rib was then similarly closed, bracing erected and all four tiebacks slackened off simultaneously, to make the arch self-supporting.

Riveting of the field splices completed the operation. Backing up was done from the interior of the ribs when necessary, access being provided through manholes with removable covers in the top cover plate.

Final erection steps

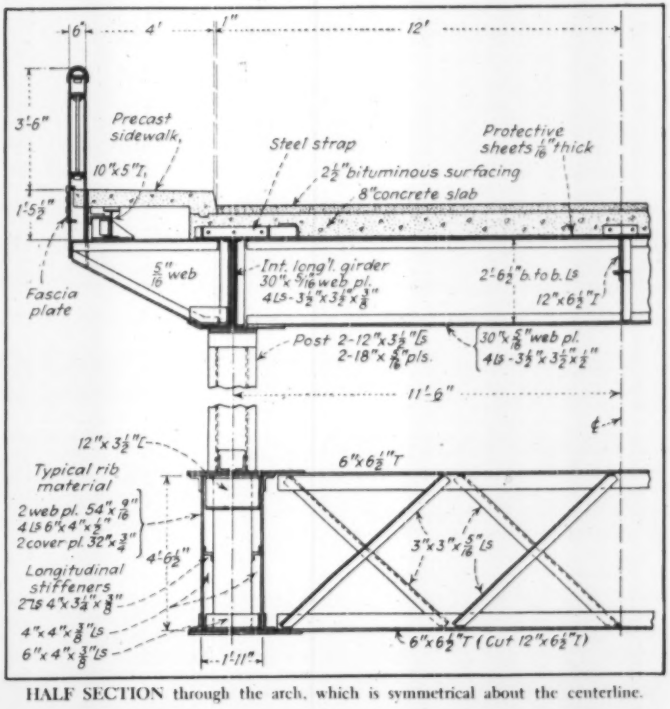
The aluminum superstructure was finished by adding the posts at 20-ft. intervals on the ribs and the floor system over the arch in 20-ft. units, as was done for the approach spans. The bridge will be cleaned, but not painted.

Next spring, the 8-in. cast-in-place concrete roadway slab with its 2½-in. thick, bituminous wearing surface will be placed. Also, the two 4-ft. sidewalks will be laid on both sides of the 24-ft. roadway. These will be composed of 5-ft. long precast concrete units, varying in thickness from 6¼ in. at the outer edge to 5½ in. near the curb.

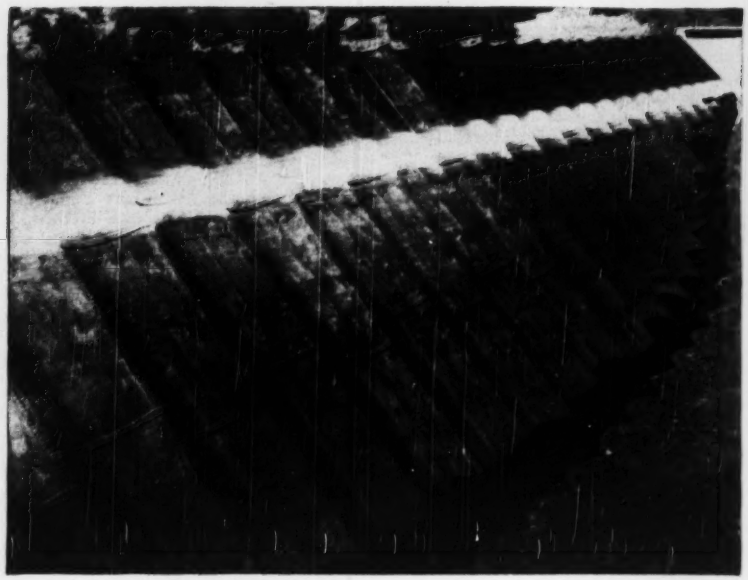
The Aluminum Company of Canada prepared preliminary designs, selected the bridge site and determined the alignment, under the general supervision of W. L. Pugh, chief engineer. The Dominion Bridge Co., Ltd., under a cost-plus-fixed-fee contract made the final design, assigning C. J. Pimenoff to the task; fabricated the aluminum superstructure; and constructed it, with Fred Bowman in charge of erection. R. S. Eadie is chief engineer for the Dominion Bridge Co.

Surveyor, Nenniger and Chenevert, consulting engineers, have been retained by the city of Arvida to design and supervise construction of the substructure, concrete deck, handrails and lighting arrangements and to inspect fabrication and erection of the bridge. R. A. Lamieux is city manager of Arvida.

The substructure was built under separate contract by Pic Construction Co., Arvida, which also will place the concrete deck and sidewalks.



HALF SECTION through the arch, which is symmetrical about the centerline.



STEEL DAM near Ash Fork in Arizona, which has shown no sign of serious corrosion after 50 years of service. The lower part had just been cleaned and painted when this photo was taken.

Steel Dam in Good Shape After 50 Years

George W. Lamb
District Engineer,
American Institute of Steel Construction
Topeka, Kan.

A LITTLE OVER 50 YEARS AGO the first fixed steel dam to be built in this country was constructed in Johnson Canyon near Ash Fork, Ariz., by The Atchison, Topeka & Santa Fe Ry. The engineer who made the decision to use steel for the principal part of the dam had no experience record for similar dams to guide him, but he knew that when properly protected with paint, steel had a long life expectancy. And as the site was not very accessible, and was more than a mile above sea level, a thin steel diaphragm offered several advantages over a heavy masonry structure.

Despite some uncertainty as to its probable life, a steel dam with stone masonry abutments was built at the Ash Fork site in 1898.[1] It is still there and its steel parts show little sign of deterioration—much less than the masonry abutments.

The dam was built from a design developed by F. H. Bainbridge for the railroad company for water supply purposes. Its central steel section is 184 ft. long at the top and has a maximum height of 46 ft. With the abutments, the total length of the structure is about 300 ft.

The steel dam is made up of 24 triangular bents at 8-ft. centers carrying a ¾-in. steel plate face on a 45-deg. slope. Except at the bottom, each plate is curved on a 7-ft. 6-in. radius. Bottom plates are flat and are embedded in a concrete-filled trench cut in the rock.

Because the steel section of the dam was designed to serve as a spillway, there is curved apron along the downstream edge of the crest to throw the overflow clear of the dam.

Water runs in the canyon only part of the year, in the spring and late summer. The dam was designed to catch and store most of these flood flows and is seldom overtopped and then only to a depth of a few inches. However, provision for overtopping to a depth of 6 ft. was made in the design. Anchor rods were installed to hold down the upstream end of each triangular bent, and anchor bolts were attached to the edges of the plates where they meet the rock or the abutments.

The dam is built on hard igneous rock which has many seams but is tight. There has been no scour as a result of the overflow.

A more detailed description of the dam as built originally can be found in *Engineering News*, May 12, 1898, p. 299.

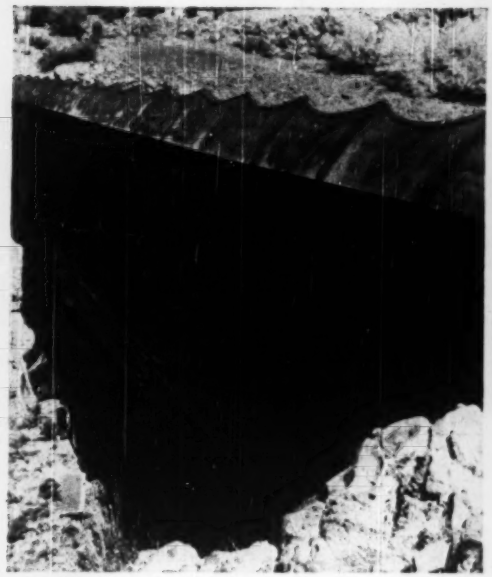
Sometime between the time the dam was built and the time an account of its condition was published in 1916, the supporting framework was enclosed by attaching corrugated metal plates to the downstream vertical leg of each steel bent.

Weather varies widely

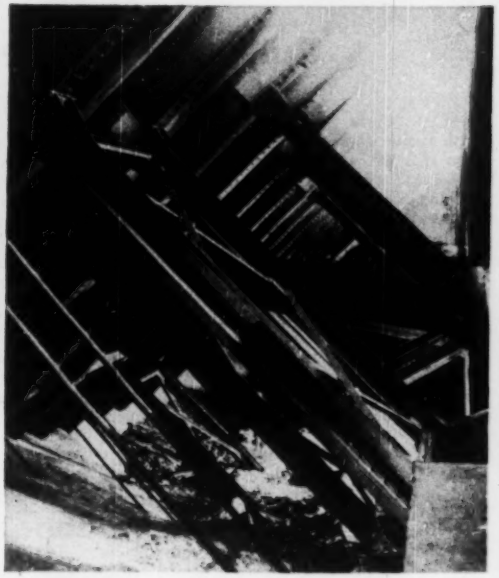
Weather conditions generally are dry at the dam, with rain falling on an average during only 45 days each year. Temperatures range from 104 deg. above zero to 11 below. Frost is common from the end of September to early June, and daily variations in temperature are wide in hot weather.

As noted previously, the dam was designed to store spring flood waters and an occasional summer flood flow. As a result, there is a large draw-down of the reservoir each year, and much of the upstream face is alternately wet and dry. At times of low water, the entire upstream face is exposed.

The chemical content of the water that is stored is represented by



DOWNSTREAM FACE showing corrugated plates that were attached to the supporting steel work some years after the dam was built. The crest is the spillway, but seldom is overtopped.



THE SUPPORTING FRAMEWORK and the downstream surface of the face of the dam are in sound condition. Bolts at the left are set in the rock as a precaution against overturning.

the following analysis, in parts per million:

Magnesium sulphate	8.6
Calcium and magnesium carbonate	113.0
Sodium chloride	26.0
Sodium carbonate	13.7
Alkalinity	100.0

Type of steel

A soft open-hearth steel was used throughout, except for rivets exposed to water, which are wrought iron. The steel was required to have an ultimate tensile strength of 60,000 psi, and an elongation of not less than twenty percent in 8 in. was called for, with a 40 percent reduction in area at point of fracture. Phosphorous was not to exceed .08 percent. This is very similar to ASTM A-7 steel, and while this is a riveted structure, it could have been welded with present day equipment.

The estimated weight of steel in the dam is 460,000 lb. A minimum thickness of material of ⅜ in. was used, which is much more than would have been required for the stresses in some of the members. At the time of the design the ⅜-in. thickness was adopted to compensate for future corrosion, which has not occurred.

Accounts of the type of protection given the steel initially are conflicting. The *Engineering News* account written in 1898 says that all metal except plates and the structural parts to be embedded in concrete were given a shop coat of raw linseed oil; also that the plates were cleaned after they were installed and then given a coat of graphite paint. An account of the dam building, published in *Engineering Record* that same year, states that hot tar was applied to the plates. However, no evidence of a tar coating can be found on the plates.

The 1916 report on the condition of the dam, which was published in *Engineering News*, states: "The original coating consisted of two applications of dry red lead and boiled linseed oil. Since 1898 the dam has been painted twice, each time with a single coating of Dixon graphite. It is carefully watched for any signs of corrosion and has been painted as frequently as necessary in the judgment of the general foreman of bridges and buildings. . . . Except for a few scattered pittings there is no evidence of corrosion except in the bottom plates which are in contact with the mud of the reservoir."

In 1948, M. C. Blanchard, chief engineer of the railroad, said: "The dam has been painted at average intervals of eight years, though six years would have been a little better."

When the dam is painted, current practice is to clear mud away from the lower part of the upstream face down to a point where the paint is found to be in satisfactory condition, then apply new paint above that point.

The entire upstream face of the dam was last painted in October, 1945, with one coat of Arco red lead and one of black paint. In March, 1948, this paint was found to be in excellent condition except at the edges where the steel joins the masonry. There, some peeling was taking place. Scaled areas were scraped and painted with Dearborn "No-ox-id" paint.

No serious corrosion

No corrosion was found on the anchor bolts.

Such pitting as was found on the face of the dam was of no significance. Pits were ⅛ in. or less in depth and average around ⅛ in. in diameter. They are scattered and have a density of from 50 to 75 per square foot.

These pits have been painted over and appear old. All were below the present ground line. They were too widely spaced to appear to be corrosion in the ordinary sense and might have been caused by ice action on the face before dirt and debris were deposited against it.

The above information was obtained during an inspection of the dam with G. L. Davenport, hydraulic engineer for the railroad, on April 12, 1948, supplemented by information from M. C. Blanchard, then chief engineer of the Santa Fe Coast Lines.

Building a Concrete Wall Under Water

SPECIAL FORMS were devised for use with tremie concrete in the construction of a 4-ft. wall for a gravel trap at the intake of Seattle City Light's hydroelectric development tunnel on the Skagit River in Washington. Severe winter weather during the 1948-49 construction season delayed completion of a new, low dam that would have permitted construction of the gravel trap in the dry. Under the system adopted, the trap was satisfactorily built, saving two months' time and an estimated $250,000.

The job is part of an operation to add 60,000-kw. to the existing power plant.

The gravel trap is simply a 140-ft. long, 15-ft. wide trough in front of the intake to the tunnel. The river, as it crosses the narrow dimension of this trough will, it is hoped, drop most of its load of sand and gravel, and thus protect the tunnel and power plant. The downstream end of this trough is open and it feeds directly into a sluice gate in the dam. This sluiceway will be opened periodically and the accumulated sand and gravel flushed out.

The underwater concrete work included placing and smoothing a 3-ft. thickness of concrete for the floor of this trough and pouring a 4-ft. high curb as an integral part of the floor slab (the tunnel invert is already 4 ft. above the floor of the trough so the existing curb at the tunnel serves as one wall of the gravel trap.)

During the work, the tunnel and the sluiceway were sealed off, water being diverted through the right half of the uncompleted dam. This reduced the river flow at the gravel trap site considerably, but it still was significant.

Steel forms for the outer curb were built without top or bottom. Each section of form was 6 ft. high, 20 ft. long and 2 ft. wide. With the help of a diver these forms were set at proper depth, some 2 or 3 ft. above excavated bottom. Adjacent 20-ft. long form sections were bolted together until the complete 140 ft. was in place.

Forms stay in place

The lower portions of the steel wall forms were pierced by 4x12 in. holes 9 in. apart through which the concrete could pass to form a footing for the wall. At the top and bottom of the holes, ¾-in. reinforcing bars 8 ft. long were spot welded so that they extended on each side of the opening. Both sets of forms were left in place after use.

The 4-ft. high curb was poured first. A 4-in. slump concrete was used. A 2-cu. yd. bucket emptied the concrete into a 10-in. dia. tremie chute. As the concrete was poured within the steel forms, it spread out from the bottom and through the holes at the sides at about a 45-deg. angle to form a footing.

The second pour involved placing concrete on the off-shore side of the outer curb for a distance of about 10 ft. This concrete was planned to slant downward from the curb to protect the footing from undercutting by the swift river current.

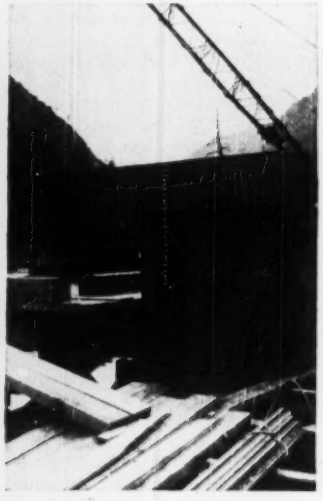
Final pour involved a depth of 2½ to 3 ft. between the curbs for the floor of the trough. Angle irons on the two curbs provided footing for a screed consisting of a weighted steel frame. This screed was fastened by cables to a winch which pulled it gradually upstream.

During all of the underwater concrete work a diver was available to guide the tremie pipe and check on its progress. The pipe's mouth was kept well-buried in the concrete at all times. On the floor slab work, placement of concrete was at the rate of 1 to 2 cu. yd. an hour.

The completed apron is within 2 in. of specified grade according to C. W. Cutler, engineer in charge of Seattle City Light's hydroelectric construction work on the Skagit River. Engineering was performed by the Seattle City Light staff.

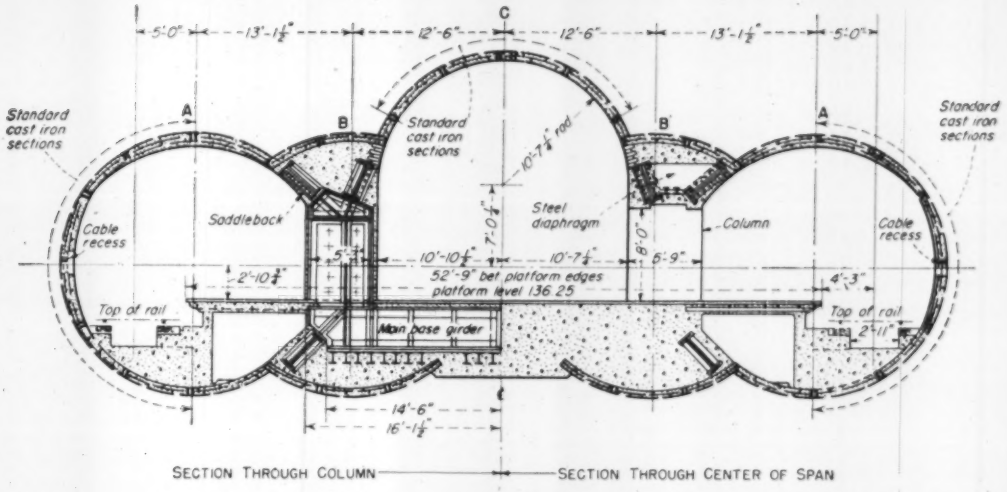
Contractor on this phase of the Skagit River work was a joint venture of Cascade Contractors, Inc., and Alton V. Phillips, both of Seattle.

ONE SECTION OF STEEL FORMS for an underwater wall is lowered into the Skagit River in Washington. Note the reinforcing rods extending from each side.



WALL FORMS being assembled on the dock. Holes near the bottom permitted concrete to pass through and form a footing for the wall.

CONCRETE WAS CHUTED from a 2-cu. yd. bucket into the tremie pipe. Narrowness of the river canyon is apparent in this photo.



Five Tunnels Make One London Subway Station

THE NEW Gants Hill station on the Newbury Park subway extension in London, England, had to have a 52-ft. 9-in. wide center concourse between tracks to accommodate offices and heavy pedestrian traffic. No single-face tunnel large enough to contain such a station could be driven by conventional methods through the London clay; normally station tunnels of the line have 21-ft. 2½-in. diameters. So, five separate—but overlapping—21-ft. 2½-in. drifts were driven. A description of the work with accompanying diagrams first appeared in THE ENGINEER, London.

Here's how it was done:

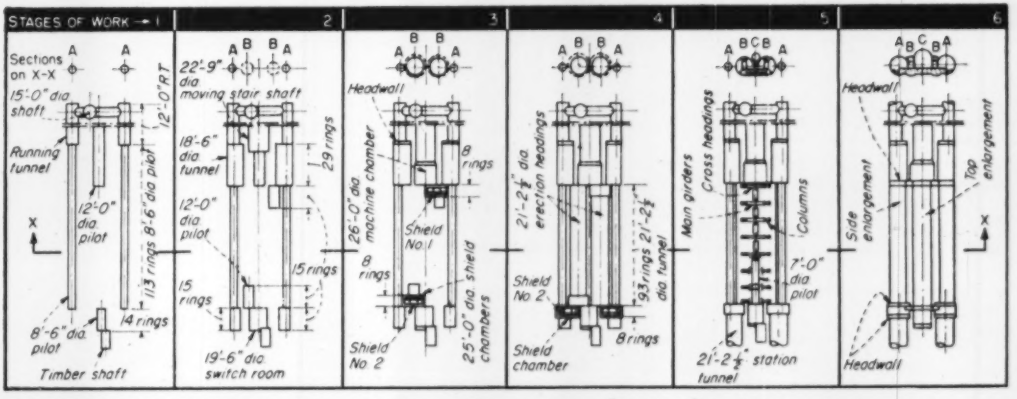
A temporary timber access shaft—later converted to a concrete-lined ventilation shaft—was sunk near one end of the station, just off the concourse center-line. Beyond the other end of the station, a 15-ft.-dia. cast-iron-lined shaft was excavated. From this round shaft, the two track lines were reached by transverse headings, and the 12-ft. running tunnels (A) were dug to where they enter the station.

Pilot headings driven

As seen in the diagram of stage 1, two 8-ft. 6-in. pilot headings were driven along the line of tunnels (A) through the full length of the station. Meanwhile, a 12-ft. pilot shaft for the 22-ft. 9-in. escalator shaft was driven to connect upper and lower levels.

Then (stage 2) from opposite ends of the station, 12-ft. pilot tunnels for tubes (B) were started. These were enlarged (stage 3) to 25-ft.-dia. shield chambers where driving shields were erected. Then (stage 4) the tunnels B were pushed through in opposite directions and lined with the 20-in.-wide cast iron rings of 21-ft. 2½-in. dia. While tubes B were being completed, shield chambers were prepared at the ends of pilot tunnels for tubes A.

In stage 5, eight short cross headings were dug connecting tubes B, and a 7-ft. pilot tunnel was started along the station centerline for tube C, top enlargement. Transverse steel girders to carry columns were threaded



CONSTRUCTION STAGES shown here in diagram form illustrate the procedure followed in driving overlapping tunnels.

through the cross cuts and supported on longitudinal beams set in concrete. All steel was brought in through the rectangular timber shaft, which had been made large enough to pass the longest girders used.

Stage 6 saw eight steel columns erected, together with longitudinal framing, in each of the tubes B, and the roofs of tubes B were underpinned by this steel. This permitted tube C to be enlarged and lined.

In the final stage, pilot tubes of tunnels A were enlarged to 21 ft. 2½ in.

Standard 21-ft. 2½-in. shields were used for driving tubes B and enlarging tubes A and C. Pilot tubes and cross-cuts were dug by hand mining methods. Only driving and enlargement of top tube C was done in compressed air —5 to 6 psi. The decision to use compressed air in the top tube was made when a shallow clay cover was found at one spot by 6-ft. exploratory auger holes made in the crowns of tubes B as they were driven.

Before final underpinning of the roof segments, made up of overlapping tube sections, all joints were calked with lead to make them watertight. With all sections enlarged to finished size and supported on the structural steel framing system, concreting of platforms, roadbed and tunnel headwalls was done.

Mott, Hay and Anderson were consulting engineers and Edmund Nuttall, Sons and Co. of London was contractor on the station.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

Guaranty of Contracts

Where a surety bond is given to secure the complete performance of a construction contract and the contractor defaults in performance, the owner, upon the failure or refusal of the surety to complete the work may complete it himself and charge the surety with the cost of completing performance. Where the work is not completed by the owner, he may recover from the surety the fair sum that will be required to complete the work.[1]

"In fixing compensation for damages resulting from breach of a contract the general rule is that the injured party should be placed in the same position as if there had been no breach. The object of the law is to place such party in as good position as if the contract had been kept. In the instant case the bond guaranteed the completion of the building; if there had been no breach of the obligation of the bond, the building would have been erected. Since this was not done, the plaintiff can only be put in as good position as if the contract had been carried out by giving her the cost of construction, not exceeding, of course, the amount of the bond. The measure of damage on a bond guaranteeing completion is the cost of completion: . . . . And in a case such as this, where the work was never begun, this cost will be the whole cost of construction."[2]

Where a contractor submits plans and specifications as to how the work is to be done and guarantees a specific result, he will be held to such guaranty and cannot recover money alleged to be due under the contract where the specific result is not accomplished.[3]

(1) Penn. R. Co. v. Fidelity and Deposit Co., 81 F. 2nd 526.
(2) Trainor Co. v. Aetna Casualty & Surety Co., 290 U.S. 47; 78 L. Ed. 162.
(3) Biggs v. Dennimore, 86 N.E. 2nd 38.

Damage to Other Buildings

As a general rule, a party employing an independent contractor to do excavation work is not responsible for damage to adjacent property. The contractor, however, is liable where the damage results from the work being negligently performed—for example, where the damage results from blasting and the damage results from the contractor using excessive charges of dynamite, when a larger number of smaller blasts would have been sufficient.

The same principle has been applied where the damage results from pile-driving. The contractor will be liable where it can be shown that the work could have been done without damage to adjacent buildings by the use of less power with little or no vibration even though the work would have been more slowly performed.

In some jurisdictions, as New York City, local statutes exist which require a person causing an excavation to be made to a depth of more than ten feet below the curb to take the necessary steps to protect the foundations of adjacent buildings. Courts have held that this duty was non-delegable and where damage results to adjacent buildings from a failure to take the necessary steps to protect their foundations, both the owner who causes the work to be done and the contractor that performs the work are liable.[1]

(1) Fagan et al. v' Pathe Industries, Inc., et al., 86 N.Y.S. 859 and cases there cited (Supreme Court, Appellate Division, N.Y., March 3, 1949.)

Breach of Contract by Owner

"If the owner breaches the contract whereby the contractor is prevented from completing it, then he can either sue on the contract and claim damages for the breach or he may waive the contract and sue for the reasonable value of his work."

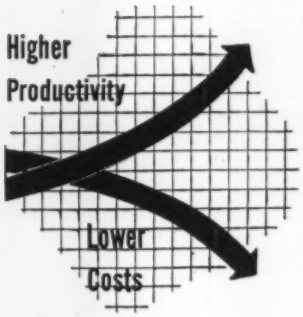
In an action brought by a contractor to recover the value of services rendered in supervising the construction of a house, where the major issue involved was the value of the work and labor furnished by the contractor, the original time books and the checks showing payment were held to be the best evidence of the amount expended. Secondary evidence of such expenditures is never admissible unless it is shown that such original records are unavailable, as where it has been lost or destroyed, or is beyond the jurisdiction of the court, or is in the possession of the opposite party who, upon due notice, fails to produce it. Where the original records are in the party's possession, they should be produced, in the absence of a good excuse for not doing it.[1]

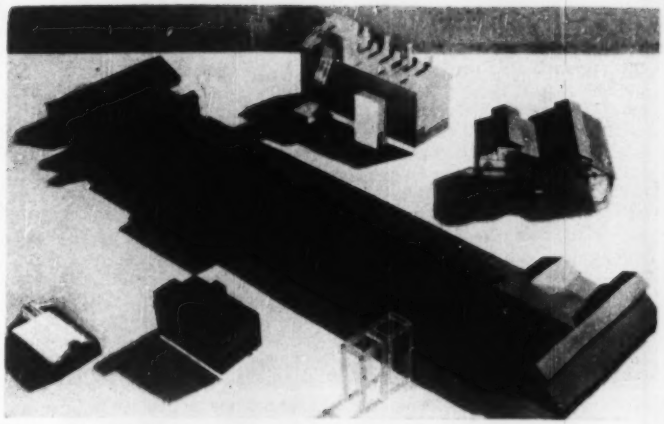
(1) Martin v. Martinous, 219 S.W. 2nd 667 (Springfield Court of Appeals, Missouri, April 15, 1949).

No Time For Performance

Where a contract fails to set forth a definite time as to when it is to be performed, the same can be terminated at will by either party.[1] The court after reviewing many cases on this subject stated: "It therefore may be accepted as a well settled rule that a contract which contains no time for performance—especially if it is one contracting for service to be performed—is an indefinite contract as to performance and may be terminated by either party at will, and whether or not it was so intended by the parties is to be gathered from all parts of the contract and the circumstances under which it was executed, as well as the purpose to be accomplished."

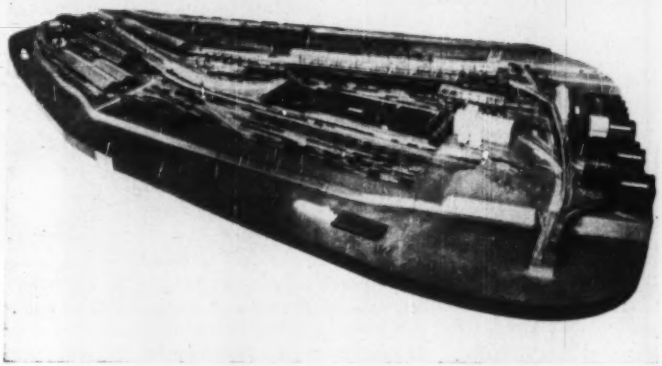
(1) Duff v. P. T. Allen Lumber Co., 220 S.W. 2nd 881 (Court of Appeals of Kentucky, May 27, 1949).





Units of an industrial plant, accurately built . .

in a model shop . . .



faithfully reproduce plant expansion—proof that . . .

Scale Models Can Save Money

Raymond A. Lester
Raymond A. Lester Associates, Mount Vernon, New York

THE SCALE MODEL—tool of study, display and selling—is a device that can save the designer time, work and money. Engineers in increasing numbers are using this tool for what it is: translation of their ideas into accurate, detailed, three-dimensional proof that their ideas are sound.

How precise scale models can be used to sell an idea; to study a problem in layout or movement; to display workings of a product can best be told in specific instances encountered by the author.

Buildings of the United Nations headquarters in New York City existed only in the minds of the architects, when our firm started on the earliest scale model (cost, $6,000). Pencil sketches by architects for the UN (Harrison and Abramovitz) guided model builders; and the model, in turn, aided designers in working out detail. Site layout, landscaping, placing, shape and size of buildings—all these steps in planning were completed with help of scale model study.

Then came the selling job. The architects had as their customer a group of men representing 58 different nations, speaking nearly that many tongues. But they had in the scale model a selling argument all could readily understand. Translated into this effective visual medium, ideas were quickly grasped by all those who had a say in changing or approving them.

Display value

This same model world capital, of wood, plastic and metal, has been viewed by thousands. Countless photographs of it have reached millions of persons the world over. Virtually the whole world knows (or can find out) just exactly what the UN buildings will look like when completed—

thanks to the display value of the scale model.

This designing aid is no toy or mere gadget. Rather, it is an important step in the testing of design ideas. The automobile industry, the electrical industry, the aircraft industry, all rely to a great extent for information on the scale model.

Construction industry uses can be just as reliable. While the blueprint affords the complete, detailed and exact picture, how many detailed engineering and architectural drawings must be studied for an accurate and complete concept of a given job? How many top-level, policy-making engineer-executives fully familiarize themselves with their projects down to the level of drafting-room detail? And, perhaps most important, how many non-technical board of director members can read or understand an engineering drawing?

Steel mill model saves money

Here's an example of how the scale model can be used:

Jones & Laughlin Steel Corp., proposes to build one of the world's most modern open hearth steel plants; construction is to cost about $60,000,000 and take 24 months. Convinced of the value of a model study for answers to the many involved problems of layout and movement, J & L engineers commissioned the author's firm to build the scale model of this plant pictured here; it cost $10,000 and was made in 14 weeks.

Its real worth is partly in intangibles difficult to evaluate. But this it did do. It saved some $1,500,000 in ultimate cost by influencing policy-makers to complete right now, along with the present expansion, a rail relocation originally planned for some future date.

Existing tracks wound through the plant, in and around existing buildings that were eventually to be removed. The model layout of proposed and present structures made obvious to all the feasibility of immediate removal of these existing structures, thus eliminating much temporary construction with a substantial cut in cost. All previous study and argument had failed to effect such a decision.

Faults in design and planning can be caught and corrected long before they reach the money-costing stage; the bugs can be taken out of a structure in the model maker's shop.

The J&L model is 17 ft. 3 in. x 8 ft. 8 in. and breaks down into five 200-lb. sections; scale is 20 ft. to the inch. Metals, plastic and wood were used. New open hearth sheds have transparent plastic roofs which permit a look at the furnaces, handling equipment and car tracks inside. Animation is added by lights that glow in the six furnaces planned to be built in the present expansion.

There were 2,000 representative railroad cars cast of metal for this job. Magnetized, they can be secured to the steel rails anywhere through the plant, making possible studies and demonstrations of traffic and materials flow. Hopper cars, ore cars, hot metal cars and locomotives are all cast in accurate detail.

Those who profited by study of the model include: J&L engineers and executives, the board of directors, stockholders, the city council, Pittsburgh's Urban Redevelopment Authority, the chamber of commerce and the general public. J&L engineers credit the model not only with reducing construction costs, but also with showing savings in operation of the completed facilities.

Another user with still another use is Locke Insulator Corp. of Baltimore, maker of power line pole insulators. This firm has equipped its sales staff with neat little model kits. Opening his kit on the desk of a potential customer, the salesman erects a model pole, attaches cross-arms and proceeds to put in place scale models of his full line of insulators, just as the customer will use them in the field. This demonstration device attracts interest, makes sales.

Selling designed projects

For selling a product as for selling an idea, the scale model pays off.

While very often the builder comes to the model maker with only vague notions or loose specifications, there are cases where finished, proven designs are modeled, just to be sold.

Take for instance the public agency with plans, designs and drawings completed for a bus terminal, playground or school—all set to build, but no money. Quickest and easiest way to get the taxpayer's go-ahead here is by giving him a look at what he's being asked to buy. The scale model can stimulate interest and support for a public works project. Private agencies find the same advantage in seeking contributions or approval of spending for improvements.

New York University gained support for its downtown law school building against bitter opposition by photographing the site as it looked and comparing it with photos of a model of the school as it will look. The before-and-after contrast so forcefully presented proved a point—and this was but one use of the model.

Other examples are many: A prefab house builder wanted to get started; an exact working model of his product gave him that start. A tubular steel roof truss for airplane hangars was designed; a scale model in faithful detail proved its utility. A port needed revamping with pier and channel changes; model ships, docks and waterline helped work out necessary alterations.

Coke ovens, grade-crossing-elimination structures, power plants, towns, traffic interchanges and watersheds—this list is a measure of the variety of things advantageously modeled—and an indication of the detail to which model makers can duplicate ideas, specifications or designs. The structurally accurate scale model can be an integral step in development of any engineering project.

Traffic Control Cuts Toll

Chicago reduced automobile traffic toll by 106 fatalities and property losses by $4.8 million over the previous 12 month period—in the first year of its stepped-up traffic control and accident program.

Citing a recent year-end review by the program director, the American Public Works Assn. pointed out that about $900,000 was spent to set up the plan. This expense was principally in new motor equipment, business machines and added clerical salaries.

First complete year of operation of the program closed Sept. 30, 1949. In that period, the death toll was 417 as compared to 523 for the previous year.

1. Reorganization of police-department traffic division. Manpower was nearly doubled, with about 1,150 of the city's 7,800 policemen now assigned to traffic. Reorganization is about 90 percent complete.

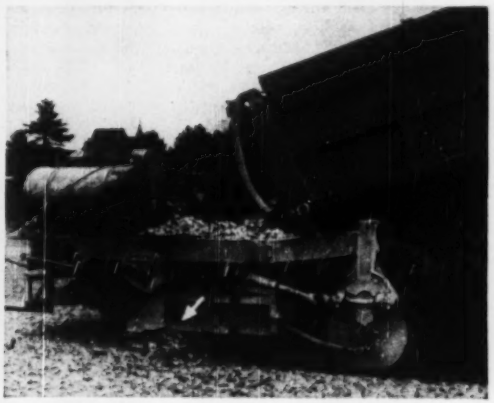
2. Procedural changes in the traffic courts. Additional courts were opened and conferences were held with judges and prosecutors on the traffic problem. Court assignments of judges to traffic cases have been made indefinite.

3. Establishment of a violations bureau and introduction of non-fix traffic tickets. A repeater file with a capacity of 500,000 names is to be used to catch chronic violators of traffic regulations.

4. Modernization of the city's ordinance. About 50 percent of the ordinances have been revised and brought up to date.

IDEAL DIGGING for this elevating grader was found in 4,000-ft. earth cut. Grader loads 16 cu. yd. in 45 seconds.

ROCK EXCAVATION—2¼-yd. shovel mucks 28-ft. face into 22-yd. side-dump wagon. Air-operated rig for drilling 5½-in. blast holes appears behind shovel atop bank.



PAVING—Spreader's rock output geared to rate of travel, measured by small wheel beside truck's rear wheel. Cut-out moldboard (arrow) increases rock-spread width.

Plenty of right machines, frill-free design, make for . . .

Fast, Low Cost Construction On New Hampshire Pike

EVERYONE on the job, including Old Man Weather, has teamed up to pull construction of the New Hampshire turnpike far ahead of schedule.

Engineers have designed a job without frills—one that's practicable. The contractor has put on plenty of the best equipment—and he knows how to make it work for him. Weather did its part by sending zephyrs instead of icy blasts last winter (only one day's excavation was lost all season).

In October, with 55 percent of the time expired, the principal contract was 85 percent complete. At present progress rates, the 15-mile coastwise toll road will be ready for traffic June 1, 1950.

This turnpike runs parallel to U. S. 1, a short distance inland from that route, and about three miles from New Hampshire's short Atlantic coastline. It connects with the Portland-Kittery Maine Turnpike on the north, and it will have a temporary connection to Massachusetts roads at the lower end. Eventually it will be part of a four-lane road system between Portland and New York (and points south).

Engineering details are outlined on the next page. The whole job was designed for a maximum of service compatible with a $7,500,000 cost limit fixed in 1947 by the New Hampshire legislature. Under 1948 bidding conditions this amount would buy an adequate road, but it wouldn't pay for desirable refinements.

The engineer had to shoot at economy without sacrificing up-to-date high-speed highway principles. All

grade separations are of one simple design, for the economies inherent in repetitive forming. Paving is a bituminous macadam (alternate bids were taken on concrete, which was found to cost more). On the other hand, in keeping with modern criteria for safe, high-speed traffic, grades were limited to 2 percent, curves to one degree; a 24-ft. dividing strip was maintained throughout. These features, of course, cost money, because they called for some fairly heavy fills, and rock cuts as deep as 35 ft.

Flat side slopes; no guard rails

Some adjustments in the design obtained a better road at no increase in cost: side slopes in fills higher than 10 ft., where guard rails were called for, were flattened and broadened outside the 1:4 pay line, with fill containing refuse from grubbing operations; this yielded a safe slope for cars going off the road, permitted guard-rail elimination, and did not harm the load-bearing property of the road.

Another variation involved permitting the contractor to cut outside of specified slopes where cuts yielded good earthfill material. Here, he moved the ditch line to 80 ft. from the centerline and trimmed his back slope to 1-on-3. This feature had esthetic value in that it made deep cuts seem less confining.

Excavation in the roadway amounted to 100,000 cu. yd. of muck and 1,111,600 cu. yd. of unclassified material (including 180,000 cu. yd. of rock.) In addition there was 1,000,000 cu. yd. of earth borrow and 600,000 cu. yd. of gravel sub-base borrow.

Highlighting the part played by Mr. Weather is the fact that the contractor's best unclassified excavation month was January, 1949, when he removed 240,000 cu. yd. While light snows fell and freezing occurred some nights, there was not more than 3 in. of frost to break at any time. It is significant, too, that the contractor, Savin Construction Co., East Hartford, Conn., made this January performance possible by being ready for the break; he had his machines on the job instead of in the yard, and he had the latest types. For initial heavy earth cuts and hauls, he had eight 14-cu. yd. two-wheel tractors and one tractor and pan, as well as eighteen large bulldozers, seven 2- and 2½-yd. shovels and plenty of off-the-highway trucks.

Earth and gravel borrow best-month figures were less imposing, earth totalling 100,000 cu. yd. in March and gravel totaling 125,000 cu. yd. in August, but they followed the time-advantage set up by unclassified excavation. Here, especially in larger pits, where long passes could be made (as well as in one 4,000-ft. long road cut), Savin dug earth with a modern high-capacity elevating grader, loading into bottom-dump trucks. The largest of eight borrow pits yielded 300,000 cu. yd.

It was the contractor's responsibility to acquire pits, most of which were adjacent to the right-of-way (maximum haul to right-of-way 1,500 ft.). In some pits most of the digging was by shovel to trucks. Where egress from pits was into roadway cuts, the contractor filled up openings after completion of borrow.

Rock excavation

To make his deeper rock cuts (up to 35 ft.), the contractor departed from conventional shallow-bench cutting by drilling full-depth 5½-in. blast holes. This enabled him to muck full face and haul near final-grade level. The drilling machine, normally used in quarrying, was entirely air-operated, moving on its own crawlers and mounting a 200-blow-per-minute air drill on collapsible leads. The self-motive feature enables the rig to move quickly over uneven ground to hole positions.

Hole spacing was 12-15-ft. and a carbide insert bit gave drilling speeds of 8-9 ft. per hour in hard rock, 20 ft. in mixed dirt and boulders. Dyna-

ENGINEERING DATA ON NEW HAMPSHIRE TURNPIKE

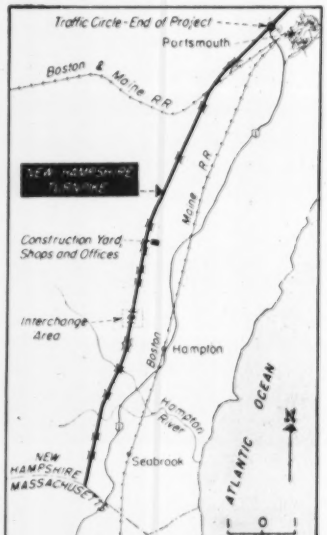
Owner. New Hampshire State Highway Department, Concord, N. H. Maj. Gen. Frank Merrill, commissioner.

Engineering. (design and supervision). Parsons, Brinckerhoff, Hall & Macdonald, New York, N. Y.; J. O. Morton and E. J. Davis, resident engineers.

Access. From Maine Turnpike and local roads at upper end; by temporary connection to U. S. 1 at lower end; at interchange 5 miles above Mass. line.

Roadway. Cross section: Two 24-ft. paved lanes, separated by a depressed 24-ft. grass strip; longitudinal drain in center; gravel shoulders 11 ft., with side slopes in fill 1-on-4; in cut, 1-on-4 side slopes 4-ft. wide form ditch, with cut slopes 2-in-1 in rock, 1-on-1½ (and flatter) in earth; right-of-way 300 ft. Alignment: Max. grade, 2 percent; max. curvature 1 deg. Construction type: Sub base, bank run gravel 1 ft. to 3 ft. depth; pavement base course 4 in. of 2-in. crushed rock penetrated with 1½ gal. asphalt per sq. yd. and filled with ½ in. stone; surface course, 3 in. of 2 in. stone penetrated by 2 gal. per sq. yd., and sealed with ¾ and ½ in. stone with .9 gal. per sq. yd., plus ¾ in. stone.

Structures. Number and functions: 17, including 13 that carry local roads over turnpike, one that carries turnpike over a railroad, one at interchange and two at streams.
Type: Local-road bridges are two-span I-beam structures providing 44 ft. 9 in. clear width and 14 ft. 3 in. vertical clearance; 15 structures are on spread footings, one is on timber piles and one on steel piles.

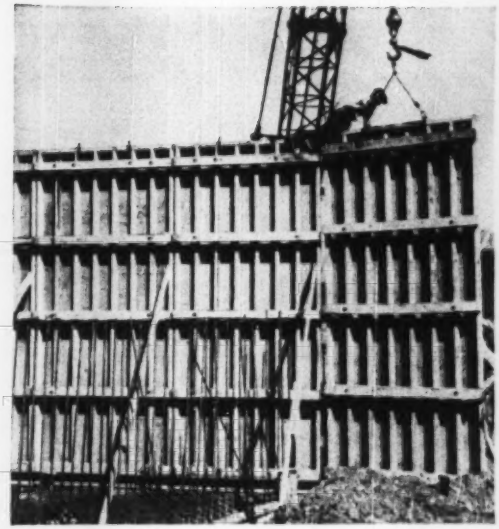


LOCATION MAP shows relation of New Hampshire Turnpike to Atlantic Ocean, U. S. 1 and local routes.

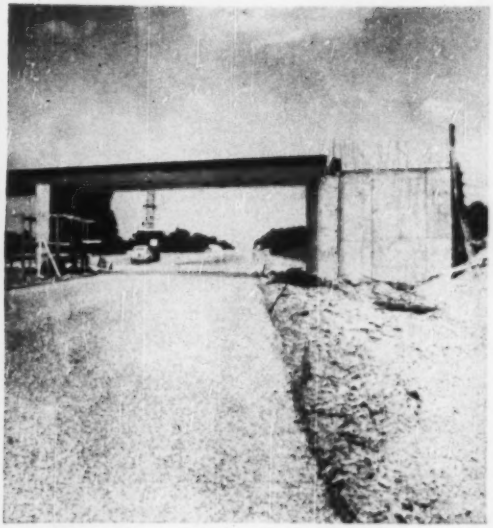
Interchange. Structures: Two I-beam bridges, one carrying turnpike over access road that connects local road to west side of turnpike, and the other carrying the turnpike over the local road itself; two toll structures, one on turnpike consisting of five island-type double-booths, and the other on access road, consisting of one double booth. Pavements: 8-in. concrete in vicinity of toll booths; bituminous macadam elsewhere.
Lighting: Interchange lighted with mercury vapor lamps (as is traffic circle at north end, in the outskirts of Portsmouth, N. H.).

Cost. $7,500,000, including $5,600,000 in the principal contract, a major connection at traffic circle at north end, miscellaneous landscaping, and engineering.

Time. Work begun November, 1948; turnpike to be opened in June, 1950.



BRIDGE ABUTMENT form panels were made outside, adjusted for re-use by insertion of headers at proper position and skew.



EVERY OVERPASS looked like this before decks and approach fills were placed. Similar design made for economical construction.

mite men loaded holes as soon as they were sunk, to avoid secondary clean-up and possible loss of holes. This was made possible by inter-connecting the charges with primacord, to be fused only when an entire blast was ready.

Generally the blasting, backed up by the one big drill, could keep a 2½-yd. shovel busy all the time. The big rig worked in major cuts only, these cuts accounting for 65 percent of all rock. Wagon drills worked the shallow cuts.

Paving work

When cuts and fills were complete, including compacted sub-base gravel, the contractor fine-graded the gravel, removing wash-board caused by constant heavy machinery travel, by scarifying, regrading and compacting and commenced paving. This was a straightforward bituminuous macadam job, although the rate of laying—for instance, 4,000 ft. of base course per day—was notable. Here again, machines were responsible. A mechanical spreader was backed up by seven 20-ton rear-dump trucks. To obtain 13 ft. base-course width, the contractor cut out the sides of the spreader's 12-ft.-width moldboard, allowing the rock to spill over an extra foot (see illustration).

A spreader with standard moldboards, followed by a chip spreader, laid the surface course. Three-wheel tandem rollers compacted both courses, to assure an even longitudinal grade. To protect the new surface from excessive off-the-highway machine axle loads, the contractor tried to keep those machines on sub-base only. However, where it was impossible to avoid the loading, no failure has been noted.

Efficient bridge construction

The new road is to be separated from cross traffic by fourteen structures, most of whose structural elements are repetitive. Similarity of elements lent itself admirably to successive use of forms and successive operations by specializing crews.

Since the structures spread over almost 15 miles, high mobility of equipment was necessary. For transportation there were two low-bed trailers. These two trailers were especially useful when a succession of pours was planned for different structures. Upon completion of a four, one trailer would take a concrete mixer and one would take a crane. Savin used three crane-and-paver teams in structural concreting, placing concrete by bucket. The cranes and pavers fitted his plans for mobility because they could walk themselves onto the low-bed trailers.

Other bridge-construction features included: (1) the abutment wall forms, which were made in outsize panels for crane erection and several re-uses. To accommodate various bridge sizes and layouts, headers were inserted in the forms, to proper position and skew. (2) Water service to concrete mixers by tank trailers that get their water from pump wells in right-of-way. There was a tank for each of the three pavers, and there was one tractor to handle all three trailers.

Cross-traffic overpasses were opened this fall. Although normal precautions were taken to prevent settlement of approaches, a temporary surfacing was applied to approaches for the openings, with final surfacing planned for next spring to correct any defects that show up.

To take care of his equipment, Savin had an excellent on-job maintenance and storage layout. Located about midway along the highway, in one of the earliest borrow pits, the layout had ample parking space, a concrete-batching plant and a demountable 45 x 120-ft. machinery repair shed.

The shed has a steel-member frame, wood roof, metal sides and tall timber doors along one side.

Facilities for machinery repair include a 4-ton chain-hoist bridge crane that serves the whole length, half width, as well as a drill press, lathe, battery-charger, two small hoists and welding, cutting and burning equipment.

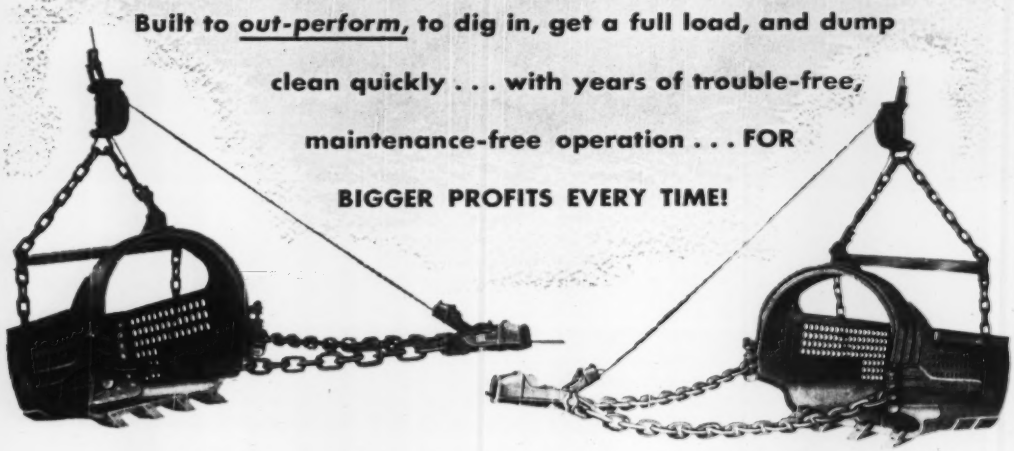
Outside the repair shed there is a hoist frame 18 ft. high and 24 ft. wide, which has been used for overhauling three shovels during the job.

Top-level management

Savin's job personnel includes L. F. McCarthy, project manager; R. L. Staples, engineer; Herbert Savin, assistant project manager.

Matchless

Matchless ability to hang onto a load and put dirt where you want it *fast* . . . that's the kind of performance you get with HENDRIX DRAGLINE BUCKETS on every earth-moving job. Built to *out-perform*, to dig in, get a full load, and dump clean quickly . . . with years of trouble-free, maintenance-free operation . . . FOR BIGGER PROFITS EVERY TIME!



LOWER MAINTENANCE—HIGHER PROFITS

3 TYPES FOR EVERY DIGGING PURPOSE

3/8 to 40 CUBIC YARDS

- ★ Full Payload Every Trip . . . FOR MORE PROFIT!
- ★ Rugged All-Welded Construction . . . LOWER MAINTENANCE COST!
- ★ 14% Manganese Steel Chains and Fittings . . . STANDARD ON ALL SIZES!
- ★ A Type for Every Job . . . light, medium, and heavy-duty. WITH OR WITHOUT PERFORATIONS.

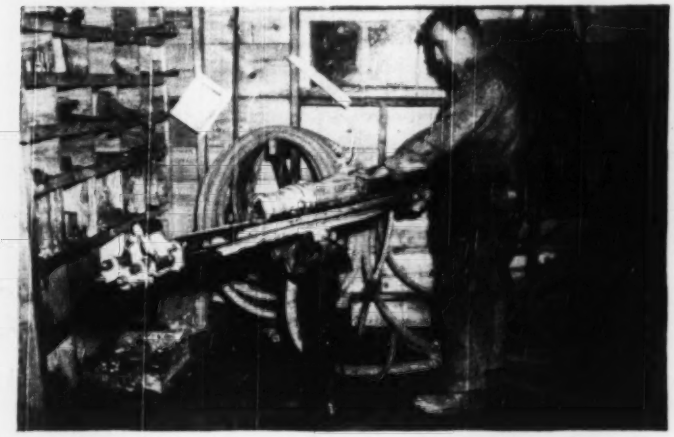
HENDRIX *Lightweight* **DRAGLINE BUCKETS**

For descriptive literature ask your dealer or write

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

FIELD AND OFFICE



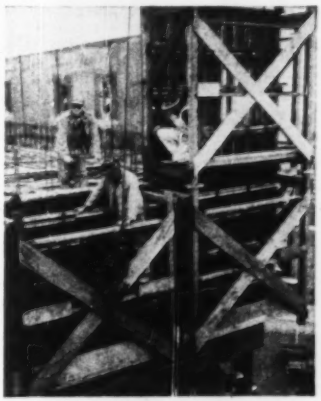
SLIDING TRUNNION on a swiveled pipe-support simplified repair and maintenance of drifters at Squirrel Hill Tunnel.

An Efficient Workbench For Drill Repairing

Maintenance and repair of heavy drifters used in drilling the twin-tube Squirrel Hill Tunnel was a full-time job for two men. The contractors B. Perini & Sons, Inc., and Associates, operated 26 drifters mounted on two jumbos. The drifters were serviced and repaired, one at a time, on a job-made support mounted in the drill-repair shop. This support, or work-bench, was made up of a sliding trunnion, mounted at waist height, on a half-saddle assembly that was fully revolving, horizontally. The swiveled assembly was welded to the top of a short pipe which was securely anchored in a concrete footing beneath the floor of the workshop. An air line was brought into the shop for testing and operating the drifters while they were supported on the sliding trunnion. Repair and replacement parts were stored in bins along one wall.

Scaffolds Built onto Forms

Wall panels used by the Harfst-Henson Co. in construction of an 18-story apartment house at Seattle, Wash., have their own built-on scaffolding. Conventional formwork was used for the first two stories, because of architectural features involved. Then two sets of typical forms with attached scaffolds were built for the next two stories and put in place with a truck crane. After the fourth story had been poured the third story forms were removed and set for the fifth story. The panels were "leapfrogged" up the side of the building in this fashion until the exterior of the $3,500,000 structure was completed. The crane handled forms up to the 13th floor, after which hoists worked from highest floor poured, to pick up the forms. Absence of separate scaffolding from the ground up made it easier for the crane to maneuver and also facilitated work at the base of the building and on the interior. A platform was lowered from the forms for removal of tie wires. The built-on scaffolding consisted principally of 4x4s, 2x4s and planking, with most connections bolted.



NO TROUBLE with erection of scaffolding here. Its built right on to forms.

Time Savers for Engineers

● Useful data including performance tables on the various types of DEMING PUMPS are available to you at no cost. Simply check the Bulletins of interest to you and mail this advertisement with your name and address to us.

CENTRIFUGAL PUMPS

☐ Bulletin 3900-B. Side Suction, Single and Two Ball Bearing Pumps. Capacities up to 200 GPM.

☐ Bulletin 4303. "Motor-Mount" Pumps. 63 standard sizes. Capacities from 5 to 650 GPM.

☐ Bulletin 4010-A. Side Suction, Single Ball Bearing Pumps with separate liquid end construction. Sizes 1" to 10" discharge. Capacities 10 to 3600 GPM.

☐ Bulletin 4013-A. Side Suction, Single Stage, Two Ball Bearing Pumps. Sizes 1" to 6" discharge. Capacities 10 to 1200 GPM.

☐ Bulletin 4012-A. Side Suction, Single Stage, Two Ball Bearing Pumps with separate liquid end construction which can be either standard cast iron or of special alloys, as specified. Capacities 10 to 3600 GPM.

☐ Bulletin 6000. Two Stage Side Suction, Two Ball Bearing Pumps. Capacities from 40 to 500 GPM.

☐ Bulletin 3300-A. Self-Priming Pumps. Capacities from 10 to 300 GPM.

☐ Bulletin 5004. Single Stage, Side Suction, Split Case, Single Ball Bearing Pumps. Sizes 1" to 10" discharge. Capacities 10 to 3600 GPM.

SUMP PUMPS

☐ Bulletin 4607. Vertical Sump Pumps and Cellar Drainers. Wide range of types and capacities up to 3200 GPM.

SLURRY AND SEWAGE PUMPS

☐ Bulletin 4810. Slurry Pumps for capacities from 25 to 750 GPM. Sewage Pumps for capacities from 60 to 1200 GPM.

CONDENSATION RETURN UNITS AND BOILER FEED PUMPS

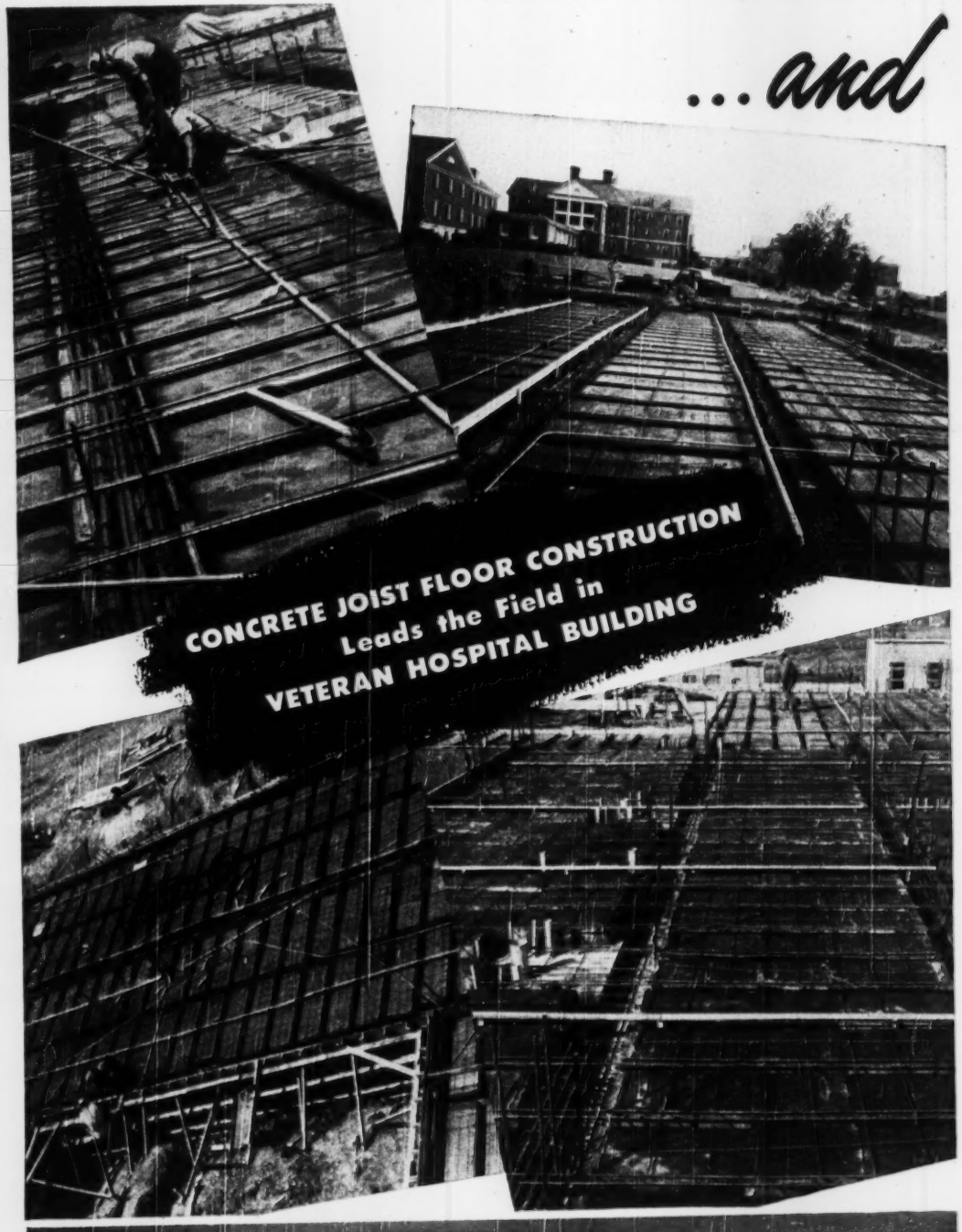
☐ Bulletin CR-1-B. Various types of standard Deming Pumps are used on these units to meet a wide range of conditions. Full range of capacities.

DEEP WELL TURBINE PUMPS

☐ Bulletin 4700-B. Water Lubricated, Deep Well Turbine Pumps. Vertical, Multi-stage construction. Capacities up to 3000 GPM.

THE DEMING COMPANY
536 BROADWAY • SALEM, OHIO

SPECIFY DEMING PUMPS

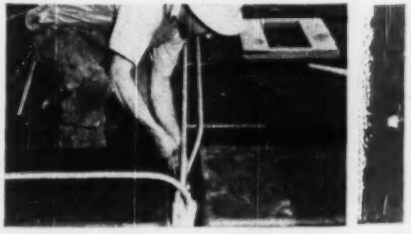

...and
CONCRETE JOIST FLOOR CONSTRUCTION
Leads the Field in
VETERAN HOSPITAL BUILDING
In construction products CECO ENGINEERING

CECO *is first in Service*

As a building method, concrete joist construction leads the field in the Veteran Hospital Building program. Here, as in other buildings, strength and durability are of prime importance. Concrete joist construction meets the need in supplying rigid, strong floor constructions which are fire resistive and sound proof. Construction costs are low since steelform jobs require less concrete, less lumber, less labor. Steelforms are used over and over again at a nominal rental charge.

As the originator of the removable steelform method of concrete joist construction, Ceco is first in the field. So, for concrete joist construction, call on Ceco, the leader over all.

Erecting steelforms on open wood centering preparatory to placing reinforcing steel. Use of steelforms mean a saving in lumber.



Placing electrical conduits in a bridging joist. All conduits are thus placed, eliminating necessity of extra space for service ducts.

Concrete is being poured here over the steelforms and around the reinforcing steel. The final step is removal of steelforms and lumber after concrete sets.

CECO STEEL PRODUCTS CORPORATION

General Offices: 5601 West 26th Street, Chicago 50, Illinois

Offices, warehouses and fabricating plants in principal cities

A Partial List of Veteran Hospitals Where Ceco Supplied Concrete Joist Construction.

Little Rock, Arkansas
Livermore, California
Alexandria, Louisiana
Saginaw, Michigan
Miles City, Montana
Grand Island, Nebraska
Omaha, Nebraska
Bonham, Texas
Roanoke, Virginia
Beckley, West Virginia
Clarksburg, West Virginia

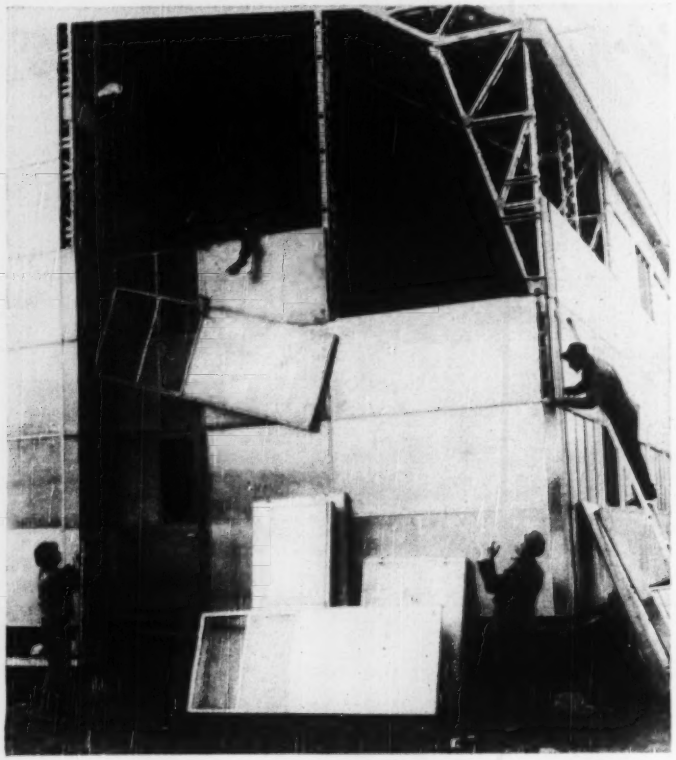
CECO STEEL®

makes the big difference

Partial List of Ceco Products

METAL RESIDENCE CASEMENTS • INDUSTRIAL WINDOWS AND DOORS • METAL FRAME SCREENS ALUMINUM FRAME STORM WINDOWS • ALUMINUM COMBINATION STORM WINDOW AND SCREEN UNITS • METAL LATH AND ACCESSORIES • STEELFORMS • REINFORCING BARS • STEEL JOISTS AND ROOF DECK • HIGHWAY PRODUCTS

DEVELOPMENTS ABROAD



PORTABLE ALUMINUM THEATER—In Hamburg, Germany, this 1,200-seat portable theater is made of aluminum parts brought from dismantled airplane plants. Its total weight is 200 tons, and it is all aluminum except the floors and ceilings. The stage is 66 x 40 ft. and there are 48 dressing rooms. The sheets and girders are numbered for quick handling. As soon as the window frames are in place, the glass panes are fastened in by clips. The large show hall can be assembled in 12 days and taken down in seven. (Wide World Photo)

Marshall Plan continues to aid construction

Grants to foreign countries by the Economic Cooperation Administration, and the counterpart funds generated by these Marshall Plan payments, continue to funnel into enterprises that require building work of various types—housing, roads, dams, sanitation, and water supply. Just how much goes for these purposes as compared with agriculture, industrial machinery, currency regulation, etc., it is difficult to estimate, but the total size of the Marshall Plan indicates that the amount is substantial.

To date, a total of $8,447,000,000 has been alloted to the 16 European countries in the Marshall Plan. As of Dec. 1, 1949, $7.5 billion had been earmarked for specific purchases, and as of Nov. 1 last $5.44 billion worth of goods had been paid for and shipped. Some $3 billion of alloted funds are, therefore, not yet spent.

All but $73,000,000 alloted over the last 21 months is in outright gifts. That amount was earmarked by Congress in the original appropriations bill to be doled out in loans. Chances of repayment of these loans are slight, and last year Congress gave up the idea of tying ECA money to loans, as being futile.

Counterpart funds are, of course, equivalent to ECA grants. The foreign governments deposit in their own currencies in special accounts whenever they receive a grant and these funds are then released periodically with the approval of ECA. Counterpart funds are now frequently tied directly to construction. These are ECA grants.

Among latest activity in this field are these:

France—The counterpart fund expenditure program of France was completed last month with the release of about $106 million for agricultural and industrial investment. The total of counterpart funds released in France in 1949 was about $751 million. Since the start of the Marshall Plan a grand total of about $1,151 million has been approved for investment and debt retirement there. The largest amount of counterpart funds released for a single purpose in France last year went to Electricite de France, which received 83.4 billion francs for expansion and development.

Austria—On Dec. 8 last, Austria released $2,400,000 in counterpart funds to reconstruct its transportation and communications systems, to increase agricultural production, to build workers' housing, and to improve its technical and trade schools.

Federal Republic of Germany—Last month ECA approved the immediate release of about $143 million from the counterpart fund for power projects, industry, agriculture and housing programs in Western Germany and Berlin. An additional $104 million will be released following receipt of a comprehensive investment program from the new German government, making a grand total of about $247 million which ultimately will be released for the development of the productive capacity of Western Germany and Berlin.

Zuider Zee Reclamation

Reclamation of the Zuider Zee, (which is the world's largest reclamation project), is to be continued. After completion of the northwest and northeast polders (tracts of low land to be reclaimed), a beginning will be made in 1950 with reclaiming the huge southeast polder. This work will take seven years, of which six will be required for construction of the dikes alone. The southeast polder area will be 123,500 acres. Here will be established the capital of the Zuider Zee Province.

Bogota Aqueduct Widening

The special funds available for the widening of the Bogata, Colombia, aqueduct in 1950 amount to about $2,000,000. About $100,000 will be used for the purchase of equipment to be paid for in January and Febru-

ary, 1950; $1,250,000 for the Chisaca Dam; $87,955 for studies for the extending of the distribution system contracted for with the Pitometer Company of New York; and $160,000 for the purchase and installation of water meters.

Mexican power loans

Two new loans from the International Bank of Reconstruction and Development have been granted to the Mexican Power and Light Co. through the Nacional Financiera, government lending agency, totaling $34,000,000 for the exclusive purpose of buying machinery and equipment for the Miguel Aleman (Valle de Bravo) and Necaxa systems.

The loans were of $10,000,000 and $24,000,000 respectively. The Necaxa system already furnishes light and power to the industrialized sections of the federal district.

Lack of funds slows work on projects in India

Work on India's major river valley projects is slowing down as the government finds itself short of cash.

Expenditure on the three big jobs now under way—the Damodar valley in Bengal, the Mahanadi valley in Orissa, and the Sutlej in the Punjab—has just been cut back $19,000,000 from the proposed outlay for the period ending next March. Since work had been going on normally until now, the effect of curtailment will be felt at once.

Work in the Damodar Valley will take a slash equivalent to $6,300,000. At the Hirakud Dam on the Mahanadi the cut was $4,800,000. The $8,900,000 balance was chopped out of the budget of the Bhakhra-Nangal project on the Sutlej on which $21,000,000 was to have been spent.

It is said that no observer of the Indian financial structure was surprised by the cutbacks. Last spring, the budget for the year starting April 1 was loudly hailed as in balance, but examination showed that only the operating costs of government departments were covered by revenues. There was almost nothing left over for financing public works, and it was realized that only deficit spending (i.e. printing of greenbacks) could hope to cover the many grandiose projects India had announced.

None of the projects has reached an advanced stage. All are still in the early earth-moving and ground-clearing period and will not be ready for installation of hydroelectric generators and other capital goods for at least two years.

...what about profits and overhead?

How would *your* firm stand in a case like this? Probably you have enough fire insurance to cover the *property* damage. But how about the equally important *income* loss during the period of the shutdown?

Hartford takes care of that! If fire, windstorm, explosion or other insurable hazard should force you to suspend business operations, Hartford Business Interruption Insurance can protect you against loss of profits. It covers expenses which would necessarily continue *plus* anticipated net profits, thus giving you *income you presumably would have enjoyed if the disaster had not happened.*

Work sheets prepared by the Hartfords will help you figure how much a shutdown might cost you and how much Hartford Business Interruption Insurance you need. Send coupon for them—there is no obligation. Or call your Hartford agent or insurance broker. In over 5000 communities you can find your Hartford agent by calling Western Union, asking for "Operator 25."

HARTFORD FIRE INSURANCE COMPANY
HARTFORD ACCIDENT AND INDEMNITY COMPANY
HARTFORD LIVE STOCK INSURANCE COMPANY

HARTFORD
FIRE INSURANCE COMPANY
Hartford 15, Connecticut

Please send free copies of work sheets for Business Interruption Insurance.

Name_____
Firm Name_____
Address_____
City_____ State_____

MUNICIPAL AFFAIRS

A 10-year water program proposed for Toledo

A ten-year, $10,000,000 program for improvement and expansion of the Toledo, Ohio, water system was submitted by Porter W. McDonnell, city service director, shortly before his recent retirement to private practice.

Some $5,000,000 of the proposed expenditure would be for distribution system improvements and expansions. Other parts of the program would include $1,735,000 for additions to the Collins Park Filtration Plant; $327,800 for water softening facilities; $205,000 for modernization of the pumping station high-pressure fire system; and $2,600,000 for operating costs of the water-softening program during the ten-year period.

At least two features of the program may be carried out in 1950—construction of a 24-in. water main for the Hampton Park area, estimated at $160,000; and launching of the water-softening program. The latter would necessitate six additional chemical feed machines, used in the lime-soda ash method of softening, costing $72,800; additional chemical storage facilities, $15,000; recarbonation unit, $10,200; sludge beds, $200,000; and contingencies, $29,800. Operating costs, once the system is installed, would be $260,000 annually, including $200,000 for chemicals, $25,000 for personnel, and $35,000 for miscellaneous.

Savings by consumers through a water-softening program was estimated at $750,000 a year in the use of detergents and soaps. An earlier study showed water hardness had been cut in half in the municipal system when its source of supply was moved to Lake Erie from Maumee River in 1942.

Atlanta raises water rates

Water rates in Atlanta, Ga., will be increased 25 per cent at once to provide over $800,000 a year additional revenue. The higher water rates have been voted by the city council to meet rising operating costs and to bring rates more in line with cities of comparable size.

Paul Weir, manager of the waterworks department, said that the first step in the domestic bill of $1.57 compares with the former rate of $1.32. With the retention of the 25 percent discount for prompt payment of bills, this brings the new rate to $1.25, against the former $1. The residential minimum covers 800 cu.ft. or 6,000 gal. The next step is 26 cents per 100 cu.ft. for an additional 4,200 cu.ft.

The 25-percent increase covers commercial and industrial use as well as domestic. It does not apply to the outside municipal accounts of Hapeville, Cobb County, Forest Park and Marietta, Ga. These rates were adjusted upward from 6 to 8 cents per 100 cu.ft. for 1949. It is expected that another raise will be made for the 1951 contract.

Mr. Weir said that the city water department has over 85,000 accounts to be billed each month. Domestic bills average between $1 and $5, commercial from $6 to $25, and industrial from $26 up.

Since 1945 the department has spent more than $4,000,000 on capital improvements and now has an $8,000,000 to $10,000,000 program to be put into effect.

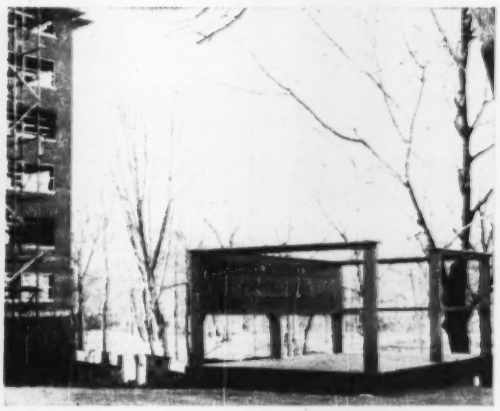
Anti Air Pollution

An air pollution ordinance is being prepared at Dayton, Ohio. The measure would establish an appeals board to aid in smoke control. Householders as well as industry and business would be subject to regulation. The measure deals with all types of fuel-burning equipment.

At the Atomic Energy project on the Los Angeles campus of the University of California a continuous record has been developed which shows particles in the atmosphere. A revolving glass disc 1/50,000-in. thick is used to determine airborne contaminants and to what extent air in a given area is contaminated. So sensitive is the equipment, that ash deposits from burning buildings within a 5-mile radius can be collected.

This continuous jet impaction method was developed by Benedict Cassen, F. A. Bryan, Leonard Baurmark and Lawrence Curtis.

To keep the public informed on progress of construction . . .



Because the new addition to the Lawrence Hospital, Bronxville, N. Y., is a Community Memorial Building, special efforts are being made to satisfy the curiosity of the public regarding progress of construction. In front of the original building is a sign with movable inserts telling what the current stage of construction is and what the next one will be, while around the corner is a platform for the safety and convenience of "sidewalk superintendents." The cost of the new wing will be about $1,800,000, much of the money having been raised by a 1948 campaign. There will be provision in the new wing for 90 beds, 14 bassinets, administrative offices, the nutrition department, surgical facilities, and delivery rooms. Architects are Eggers and Higgins, New York, and the builders are Barr & Barr, Inc., also of New York. A. J. O'Brien is hospital superintendent—(Falkenbury Photo)

Reg. U. S. Pat. Off.

Medusa turned him to stone with a glance

Medusa was a Greek mythological monster whose baleful glance turned living things including soldiers, animals and trees to stone. As our trademark, it symbolizes the modern magic with which the seven Medusa "Job-Fitted" Portland Cements create construction as solid as native rock.

MEDCO ACTS almost as fast!

Medusa MEDCO High Early Strength Cement *makes concrete construction stone-hard almost as fast* as Medusa turned living things to stone. In a period of 24 to 48 hours concrete using MEDCO attains full service strength. Concrete poured in the warm hours of the day is safe from freezing by evening . . . concrete poured on Friday is ready for use on Monday! Wise contractors standardize on MEDCO for winter work and save thousands of dollars. High costs for protecting concrete are slashed. In coldest weather forms are released for reuse in three days. By shrinking job-completion time, MEDCO correspondingly cuts labor cost.

Specify MEDCO for roads . . . rush concrete . . . all cold weather construction. For more details on how MEDCO aids winter construction mail coupon for booklet.

"FIFTY-EIGHT YEARS OF CONCRETE PROGRESS"

MAIL THIS COUPON *NOW!*

MEDUSA PORTLAND CEMENT CO.
1001-6 MIDLAND BUILDING • CLEVELAND 15, OHIO

Gentlemen:
Please send literature on MEDCO High Early Strength Cement.

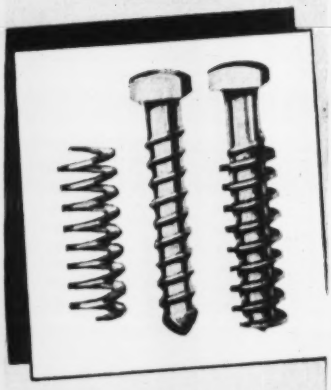
Name .....

Address .....

City ..... *State* .....

Also made by Medusa Products Company of Canada, Ltd., Parts, Ontario

After 38 years it's still RICHMOND Screw Anchors for anchorage to concrete. 3/8" to 1½" diameter for temporary or permanent anchorage



INSIST ON RICHMOND
AND BE SURE IT'S RICHMOND!
Richmond
SCREW ANCHOR CO. INC.
816-828 LIBERTY AVENUE · BROOKLYN 8, N.Y.
MANUFACTURERS of ENGINEERED TYING DEVICES, ANCHORAGES and ACCESSORIES for CONCRETE CONSTRUCTION

SEND FOR FREE CATALOG
RICHMOND SCREW ANCHOR CO., INC.
820 Liberty Avenue, Brooklyn 8, N. Y.
NAME
ADDRESS
CITY STATE

EDUCATION and RESEARCH

NEW ENGINEERING BUILDING—Ground was broken early in December for Unit B building, College of Engineering, at the University of California at Los Angeles. This is the second building of a new engineering group which will cost some $10,000,000 ultimately. This unit, to cost about $720,000, will accommodate aeronautical engineering and research labs. A wind tunnel will extend through the ground and first floors. Adjacent to this area will be a "fatigue" room for testing the strength of structures. The use of jet-type motors requires a building-height exhaust stack. Honeycomb cells lining the interior of this stack will sound-insulate the structure. Robert E. McKee is the general contractor. George Allison and U. F. Rible are the architects, with Welton Becket supervising architect.

Fog and steam curing of concrete investigated

Advantages of curing concrete by steam appear to be limited to the early-age strengths, according to tests made for the U. S. Bureau of Reclamation and reported in "Early Strength of Concrete as Affected by Steam Curing Temperatures," by Joseph J. Shideler and Wilbur H. Chamberlin (Title No. 46-18, Journal of the American Concrete Institute, Dec., 1949).

Designed to furnish data on the compressive strength of concrete, the tests also indicated that 28 days of continuous fog curing produces higher 28-day strengths than steam curing or combinations of steam and fog curing.

Other conclusions were: A delay of a few hours prior to steam curing is beneficial; temperatures between 130 and 165 deg. F. give optimum results; temperatures above 165 deg. F. and rapid temperature rise are injurious; and the advantage of continuous steam curing is very marked for the first 24 hours but decreases rapidly with age and is of little importance after about 48 hours.

Home Building Tests

Home construction sites will be made into field testing laboratories by the National Association of Home Builders, 1028 Connecticut Ave. N. W., Washington 6, D. C. Tested will be new materials, appliances and construction methods developed in research laboratories. Cooperating will be the building research advisory board of the National Academy of Sciences.

Laboratory projects ready for field testing are being compiled by Wm. H. Schieck, executive director of the Building Research Advisory Board in cooperation with Carl G. Lans, technical director of the National Association of Home Builders.

During the course of the "observation projects" close study will be made of application, organization of work, personnel and materials, and time and motion studies.

New Degrees at Toledo—University of Toledo, Ohio, has voted to replace the general degree of bachelor of engineering with five new degrees in specialized fields—civil, chemical, electrical, mechanical, or engineering physics. Student heretofore could specialize by choosing what are known as "options," but the degree did not indicate in what type of engineering he was specially trained. Only minor changes from the "option" type curriculum will be needed to enable students to qualify for the new degrees, said President Wilbur W. White.

Small Homes Council—Basement less houses will be one of the major topics at the fifth annual University of Illinois small homes council short course in residential construction for builders and contractors, which will be held Jan. 25-26. Recent research work in construction methods and residential planning will be presented by members of the council's staff.

Cost of a Flood—The damage tab for that recent Skagit River flood in northwest Washington, (ENR Dec. 8, p. 26) includes 2,700 ft. of dikes, five bridges and 3.5 mi. of road. Altogether, the bill may run to $1,000,000, according to Soil Conservation Service estimates.

New Bridge for Boston—Approval has been given the Port of Boston Authority for plans to build a $2,000,000 bridge across Quincy Bay connecting Moon and Long Islands. Financing would be by a city bond issue. Work is to start this spring on the 3,700-ft. structure, which will take a year to build.

Puget Sound bridge wins new endorsement

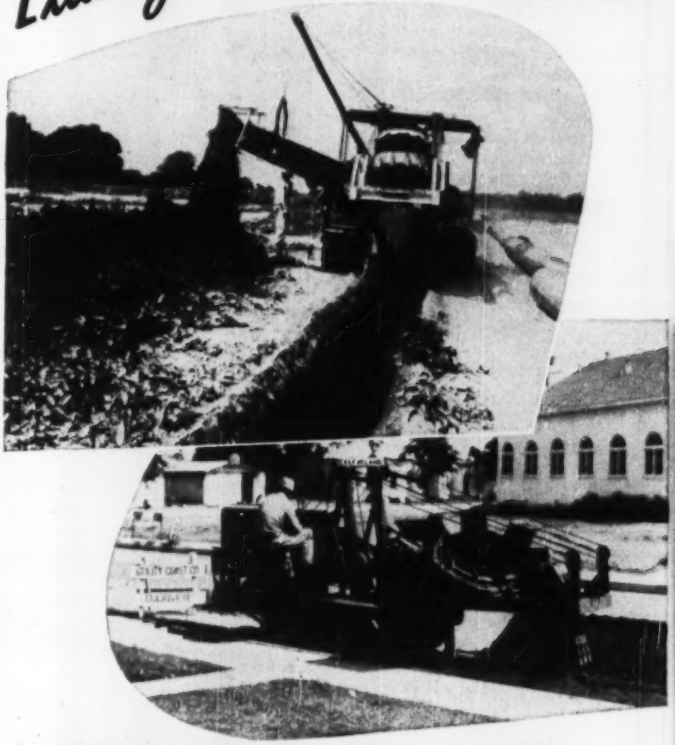
Commissioners of five Puget Sound counties have endorsed state plans to seek federal financing for engineering studies of a Puget Sound bridge. The state plans to ask $75,000 in planning funds. Another $325,000 may be sought from the 1951 legislature, also for planning.

Construction could be complete within six years after engineering studies began, according to Charles E. Andrew, chief consulting engineer for the Washington Toll Bridge Authority. Andrews favors a floating bridge to Vashon Island and a suspension bridge from the island to the mainland to the west. A $50,000,000 bond issue would be required if the bridge is built.

CLEVELANDS GIVE YOU

Exactly What You Want

ON THE TRENCHING JOBS



VERSATILITY—DEPENDABILITY
LONG SERVICE LIFE

And Low Cost Operation

They have the Guts, the Power, the Speed, the Traction and the Maneuverability to carry through and deliver clean, straight trenches for transmission, distribution and service lines, for conduit and cable and for drainage, irrigation and building foundations. You can depend on CLEVELANDS every time because of such long-pioneered features as: Correct wide-crawler, wheel-type design—rugged all-welded construction—ample smooth-flowing power, correctly applied—a wide range of transmission-controlled speed combinations—extreme ease of operation and many other exclusive CLEVELAND features that make for MORE TRENCH—IN MORE PLACES—AT LESS COST.

See your nearest CLEVELAND distributor for details.

THE CLEVELAND TRENCHER CO.

20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

MEN AND JOBS

C. C. Reynolds has been retired as New Castle County division engineer of the Delaware State Highway Department. He served for 31 years with the department, and became division engineer in 1940.

Stanley T. Elcock, who left the Bureau of Reclamation in 1948 to enter private practice, has returned as chief of the development division, Delta District, Stockton, Calif. He will supervise the obtaining of preconstruction engineering design data for the American River Development, including the Folsom power plant and transmission lines and the Sly Park Project. A graduate of the University of California in civil engineering, Mr. Elcock worked on western Reclamation projects for more than 18 years before entering private practice.

Harry C. Vensano, director of public works for San Francisco since 1942, will resign in February to reopen an office as a consulting engineer. In 1939 he became assistant public works director for the Golden Gate International Exposition, later returning to private practice until October, 1942. The Broadway traffic tunnel, a $6,000,000 project, is the last of many major improvements started under his supervision. Others are: the $38,000,000 sewage treatment system, now under construction, and the Lake Merced District storm sewer.

When the New Jersey State Highway Department and the Pennsylvania Railroad slipped a 167-ft. grade-separation bridge into place on the Pennsylvania's main line at Iselin, N. J., these men were among those most concerned with the project's success: R. D. McGilvra, superintendent and chief engineer for Brann and Stuart, contractors; Morris Goodkind, E. W. Kilpatrick and Spencer Miller Jr. respectively bridge engineer, acting chief engineer and commissioner of the highway department.

William N. Patten, former vice-president and still a director of the Stone & Webster Engineering Corp., Boston, Mass., recently completed 50 years' service. In recognition of his leadership in accident prevention, and his contributions to engineering and construction, a trophy in his name has been established as an annual award for S & W projects having an outstanding safety record. He retired from the executive post in 1948. Left to right, are J. R. Lotz, chairman Stone & Webster Engineering Corp.; Patten; Whitney Stone, president Stone & Webster, Inc., and Russell T. Branch, president of the engineering corporation.

L. H. Powell, formerly assistant to the chief engineer for Santa Fe Railway System, Chicago, is now chief engineer of the company's Coast Lines, headquarters Los Angeles. He succeeds **M. C. Blanchard**, who has retired. A graduate of Texas A&M, Mr. Powell entered the engineering department in 1909. Later he engaged in private engineering activities until 1917 when he was employed in the chief engineer's office at Amarillo, Tex. He transferred to Chicago as an assistant engineer after World War I. Mr. Blanchard, who retired after more than 47 years with the company, entered Santa Fe employ in 1902 following his graduation from the University of Kansas. He became chief engineer in Los Angeles in 1929. **R. H. Beeder**, district engineer, Eastern Lines, has been appointed assistant to the chief engineer of the system, succeeding Mr. Powell. **H. E. Wilson**, district engineer, Coast Lines, succeeds Mr. Beeder.

Joseph C. Brown, of Wilmington, Del., has been named New Castle County maintenance engineer of the Delaware State Highway Department. He has been assistant and succeeds **Leslie Maxwell**, who will become division engineer.

Alexander Murray, assistant division engineer at New Castle County, for the Delaware State Highway Department, has resigned to join Damon and Foster, consulting engineers, Sharon Hill, Pa.

Richard S. Patton has been appointed engineer of surveys and design for the Tennessee Department of Highways and Public Works at Nashville. Mr. Patton was plans engineer for the department for ten years and earlier served as division construction engineer in Chattanooga. He succeeds **Wm. N. Rees** assigned to the First Construction Division at Knoxville.

T. S. Paulsen has been elected vice-president in charge of the Boston, Mass., branch office of the George A. Fuller Co. He has a C. E. degree from the University of Minnesota, 1922. He was a field engineer with Foley Brothers, and later with the Corps of Engineers, U. S. Army, as junior civil engineer on Wilson Dam, Muscle Shoals, Ala. He joined the Fuller Co. in 1928 as a field engineer.

Appointments by Connecticut Highway Commissioner G. Albert

Hill are: For the Hartford district, **Wells Grotta** will head the office division; **Walter Jones,** surveys and plans; **Malcolm Pearce,** construction; and **Roland Smith,** maintenance. For the Norwich district, **William Neilan** will head the office division; **Lucien Beebe,** surveys and plans; **Roland Bennett,** construction; and **Walter Shuler,** maintenance. For the New Haven district, **Edward J. Burns** will head the office division; **Earl Vinal,** surveys and plans; **Leo Conaty,** construction; **Louis Pike,** maintenance For the New Milford district, **Leonard Welch,** office; **Franklin Disbrow,** surveys and plans; **H. Kennel,** construction; and **E. Morgan,** maintenance.

Lieut. Col. Walter P. Leber has been made executive officer of the Walla Walla district, Corps of Engineers. He goes from the Seattle district, where has was special assistant to the district engineer, working on Chief Joseph Dam. He replaces **S. G. Neff,** who has been transferred to McNary Dam, replacing **Lieut. Col. William Ellison, Jr.,** as resident engineer.

After 31 years of service, **L. M. Fisher** has resigned from the U. S. Public Health Service to become the engineering field associate of the American Public Health Association. He will work toward improvement of sanitation services in local health departments.

Col. Beverly C. Snow is assistant to the division engineer Corps of Engineers, at St. Louis, Mo. (Upper Mississippi Valley div.) He is a 1918 graduate of West Point. He has had tours of duty in Europe, the Philippines, Panama and Guam, and received his river and harbor experience in the New York District engineer of the Wilmington, N. C. district. At the close of the War, he was Deputy Chief Engineer for the Mediterranean Theater.

VIBER VIBRATORS

specified for the largest projects in the world...

THE specification by engineers and contractors for Viber Vibrators and recommendation by construction men is mounting evidence of their efficient, economical service.

RESEARCH DEVELOPS NEW METHODS....

A far-reaching program of research has made Viber a leader in the development and application of modern methods of concrete compaction.

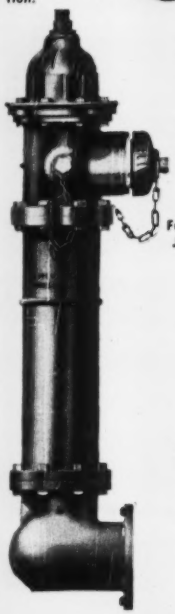
EXCLUSIVE RUBBER TIPS, PX-6 EXTERNAL VIBRATOR, INTERCHANGEABILITY... ELECTRIC, PNEUMATIC, GASOLINE and PAVING VIBRATORS

VIBER COMPANY • CONCRETE VIBRATORS SINCE 1931
Dept. 20, 726 South Flower Street, Burbank, California.

Please write for illustrative catalog on complete line of Viber equipment.

HYDRANTS
VALVES
and
WATER WORKS ACCESSORIES

A. W. W. A. type iron body, bronze mounted with double-disc parallel seat or solid wedge type. Non rising stem, out side screw and yoke, or with sliding stern and lever. Also furnished hydraulically operated. Square bottom type operates in any position.



M & H furnishes both regular type A.W.W.A. fire hydrants and special Traffic Model designed to yield at the ground line under impact.

Valves & Hydrants Furnished Mechanical Joint When Desired

M & H PRODUCTS INCLUDE—
Fire Hydrants
Gate Valves
Tapping Valves
Special Castings
Tapping Sleeves
Check Valves
Floor Stands
Extension Stems
Mud Valves
Flap Valves
Sludge Shoes

M & H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

OBITUARY

Ed. H. Connor, 85, engineer who helped build the San Francisco-Oakland Bay bridge, died at Leavenworth, Kan., Dec. 28. He was managing engineer of Bridge Builders, Inc., an organization of contractors that built the bridge. A vice-president of the Missouri Valley Bridge and Iron Co of Leavenworth, and its chief engineer from 1899 to 1935, he was an 1887 graduate of Washington University, St. Louis, Mo.

C. R. Spencer, 70, Zanesville, Ohio, city engineer for more than 20 years, died Dec. 26. He was first named city engineer in 1915, serving until 1934, and then was re-appointed in 1946.

John A. McCormick, 55, city and county engineer at York, Neb., died Dec. 20.

Eugene G. Grogan, 50, a Berkeley, W. Va., contractor, died Dec. 15 in Rochester, Minn. Mr. Grogan was one of the founders of the Vecellio and Grogan Construction Co., organized in 1938. Within the last eight years his company had state contracts for more than $2,000,000 worth of road and highway work.

Irving W. Hyland, 55, assistant division engineer, New Hampshire Highway Department, died at Newport Richey, Fla., on Dec. 17.

Warren Waldie Inglis, Sr., a civil engineer and contractor, died in Utica, N. Y., Dec. 20. He originally was with the Post McCord Steel Construction Co. in New York, erecting skyscrapers. Later he was with the Engineering Corps of the War Department. He went to Utica about 25 years ago and was with the Bedford Construction Co., later becoming a partner of the Harvey Construction Co.

O. A. Mechin, civil engineer who was resident plant manager of the Kaiser shipyards in the Portland Ore., area for the Maritime Commission, died at Portland, Dec. 15. After the war he became president of Columbia Ship Building & Drydock Co., later returning to the practice of civil engineering. He practiced in Washington, D. C., before going to Portland.

Joseph D. Creveling, 65, for the last ten years a consulting engineer in Chicago, and formerly with City Service Gas Co., in New York for 20 years, died Dec. 7, in Chicago. He was formerly president of the Panhandle Pipe Line Co. in New York.

John T. Marshall, 70, who retired Nov. 30 as district engineer, Atlanta, Ga., for the Bureau of Public Roads died Dec. 23.

Albert Henry Guillot, 59, principal roadway engineer for New Orleans Public Service, Inc., died Dec. 20. He had been with the company for nearly 30 years.

Melvin H. Rice, 53, engineer of Lucas County, Ohio, died Dec. 21. He had 29 years experience in highway drainage, structural design, and construction. In the first world war he served two years overseas with the 7th Engineering Corps of the 5th Division. He received his civil engineering degree from Purdue in 1924.

Alfred F. Harley, 87, died at Jacksonville, Fla., Dec. 22. He formerly was city engineer of Jacksonville and engineer of Duval County.

H. M. Roberts, 64, a construction engineer with James Stewart & Co., New York contractors, died in New York Dec. 26. A 1905 graduate of Sheffield Scientific School of Yale, he first went with the N. Y. Telephone Co. His work latterly was in the construction of industrial plants, railway terminals and hospitals.

Carroll Miller, 74, construction engineer, and since 1933 a member and formerly chairman of the Interstate Commerce Commission, died in Washington, D. C., Dec. 24. A graduate of Stevens Institute of Technology, he was a specialist in public utilities construction work. For nearly 10 years he had been chief of the I.C.C. bureau of railroad and pipeline valuation.

Donald S. Taylor, 45, for 10 years administrative assistant to the city engineer of Kansas City, Mo., died there Dec. 11.

Ralph D. Thomas, 71, of Wayzota, Minn., president of the Ralph D. Thomas and Associates, Inc., consulting engineers of Minneapolis died in that city Dec. 16. For 20 years he was hydraulic engineer for St. Anthony Falls Water Power Co.

R. W. Tripp, 50, office engineer of the Kentucky highway department, died at Frankfort, Dec. 29. He had been with the department for 26 years.

unscrambled, they all say one thing...

Low Cost Per Unit of Work

and that means...

Bethlehem Wire Rope

Ever stop to figure the *real* cost of your wire rope—the cost per unit of work? Do you know, for example, what your rope is costing you for every yard of rock it moves? Or every ton of ore, coal, or slate it hoists? Or every ton-mile in oil-country rotary drilling?

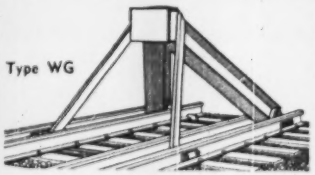
This yardstick—cost per unit of work—is the only *true* measure of wire-rope expense. Purchase price alone is not the answer. The rope with the lowest price tag isn't necessarily a bargain. It's the service life—the total amount of work it will do—that determines your actual cost. That's why we say: specify Bethlehem.

Bethlehem wire rope is a quality product, one carefully and conscientiously built. From the making of the steel to the final reeling and shipping, it is a product that merits your confidence. Because of its long life in service, its cost per unit of work is *low;* it is an economical rope in the truest sense.

Order some today. Check its performance—check thoroughly. We believe you'll soon agree that there isn't a better, more economical rope on the market.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

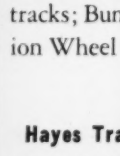


When a bumping post is knocked out don't simply say "they hit it too hard" and let it go at that. Your investigation will lead you to use Hayes Posts, designed by engineers for engineers. Hayes has led since 1903 in safety devices for railway side tracks; Bumping Posts, Cushion Wheel Stops and Derails.

●

Hayes Track Appliance Co.

110 N 3rd St., Richmond, Indiana



New 2" aluminum pump weighs 105 lbs., pumps 9000 gph . . . Gives high head performance for price of low head pump.

JAEGER PUMPS make wet jobs dry

Extra power and double priming action to dewater faster. Built to outlast cheaper pumps by thousands of hours.

Heavy duty 2" to 10" models for low or high head requirements. Super-Jet pumps for pressures to 275 lbs. Diaphragm and caisson pumps. Get catalog.

THE JAEGER MACHINE COMPANY

Columbus 16, Ohio

Elections and Activities

Albert G. Fiedler of the U. S. Geological Survey, has been elected president of the District of Columbia Section of the American Society of Civil Engineers. He succeeds Byron Bird, chief of the engineering division of the Engineer Corps of the Washington District. Other officers are: Charles J. Stevens, Bureau of Yards and Docks, vice-president; Waldo E. Smith, National Research Council, secretary; Daniel B. Ventres, Bureau of Reclamation, treasurer, and James M. Gongwer and J. Slater Davidson, directors for two years.

New officers of the Associated General Contractors of Illinois are: Wm. H. Kewley, president; N. R. Jansen, vice-president, and Thos. H. Joyce, secretary-treasurer. M. P. Flickinger is executive secretary.

Officers of the Northwestern section of the ASCE are: F. S. Altman, of Minneapolis, president; C. W. Britzius, 1st vice-president; G. V. Guerin, Jr., 2nd vice-president and Thomas R. Klingel, secretary-treasurer.

The Southeast chapter of the Professional Engineers Society of West Virginia has elected these officers: President, Frank Watson; vice-president, A. J. Johnson; J. E. McCoy, secretary-treasurer.

Ivan H. Gore has been elected president of the Ohio Home Builders Association. Peter D. Kleist was elected vice-president; Joseph Robers, treasurer; and A. B. Stanberry, secretary.

Robert W. Flack, city manager of Durham, N. C., has been elected president of the International City Managers' Association. The five regional vice-presidents are: G. H. Talmes, Fort Collins, Colo.; Clarence M. Elliott, Jackson, Miss.; J. A. Raffield, Sumter, S. C.; L. J. Houston, Fredericksburg, Va.; and Carleton F. Sharpe, Hartford, Conn.

Illinois section of the ASCE has elected Otto K. Jelinek president, succeeding C. H. Mottier, Mr. Jelinek, an associate of Ralph H. Burke Co. consulting engineers, formerly was with the Chicago Park Board. Mr. Mottier is vice-president and chief engineer of the Illinois Central Railroad.

The Homebuilders Association of Erie County, Pa. ,has elected the following: President, Floyd Andrus; vice-president, John Nies; secretary, Cyril Sullivan, and treasurer, Harry Baughman. New directors are Gustav Bertelsen, C. A. Davis, Julius Schaaf, A. L. Fitts, Arthur Reichel, Earl Snell and Lawrence Nolan.

MAJOR MEETINGS

Associated Equipment Distributors, Stevens Hotel, Chicago, Ill., Jan. 15-19.

American Water Works Association, N. Y. Section midwinter luncheon, Hotel Statler, New York, N. Y., Jan. 17.

American Society of Civil Engineers, annual meeting, Commodore Hotel, New York City, Jan. 18-20.

New York State Sewage Works Association, annual meeting, Hotel Statler, N. Y. City, Jan. 20-21.

National Sand & Gravel Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 22-27.

National Ready Mixed Concrete Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 22-27.

Conference on Polluted Irrigation Water, Auspices Environmental Health Study Section, Public Health Services; El Paso Health Dept., and Texas State Health Dept., El Paso, Tex., Jan. 27.

National Crushed Stone Association, convention and exhibit, Stevens Hotel, Chicago, Ill., Jan. 29-Feb. 2.

Midwest Materials Handling Conference, Technology Center, Illinois Institute of Technology, Chicago, Ill., Jan. 30-Feb. 1.

Association of Asphalt Paving Technologists, annual business meeting, Statler Hotel, St. Louis, Mo., Feb. 6-7.

National Association of Home Builders, Congress and Stevens Hotels, Chicago, Ill., Feb. 19-23.

American Concrete Institute, annual convention, Edgewater Beach Hotel, Chicago, Ill., Feb. 20-22.

National Council for Stream Improvement, annual meting, Waldorf-Astoria Hotel, N. Y. City, Feb. 20-22.

Minnesota Federation of Engineering Societies, exposition, Minneapolis Armory, Minneapolis, Minn., Feb. 21-23.

Ontario Road Builders' Association, Royal York Hotel, Toronto, Ont., Feb. 22.

American Concrete Pipe Association, annual convention, Fairmont Hotel, San Francisco, Calif., Feb. 22-25.

Associated General Contractors of America, national convention, San Francisco, Calif., Feb. 27-March 3.

American Road Builders Association, annual meeting, Netherland Plaza Hotel, Cincinnati, Ohio, March 6-9.

Second Inter-American Sanitary Engineering Congress, Mexico, March 16-26.

New Jersey Sewage Works Association, annual convention, Hotel Stacy-Trent, Trenton, N. J., March 22-24.

National Plastics Exposition, Navy Pier, Chicago, Ill., March 28-31.

Highway Engineering Conference, University of Utah, Salt Lake City, March 29-31.

UNIT PRICES BID BY CONTRACTOR

Ready-mixed concrete

For maintenance of way of the New York City transit system, the BMT division took bids Nov. 10, 1949 on 11,000 cu. yds. of ready mixed concrete with unit price extras for admixtures and unconventional delivery times. Bids include all work, labor and materials required by specifications.

1 Ryan Ready Mix Concrete Corp., Smith Corner-Ninth St. Brooklyn 15, N. Y. $89,815
2 Colonial Sand & Stone Co. Inc., 30 Rockefeller Plaza N. Y. 20, N. Y. 92,705
3 M. F. Hickey Co. Inc., 83 Ninth St. Brooklyn 15, N. Y. 107,438
4 Cranford Co. Inc., 52 Ninth St. Brooklyn 15, N. Y. 113,458

Item	Quantity	Unit Prices 1	2	3	4	Dollars 1	2	3	4
Concr. type									
A 545 lb cmt.	cy	1,000	9.15	9.20	10.00	11.08	9,150	9,200	10,000	11,080
B 480 lb cmt.	cy	300	8.75	8.70	9.75	10.56	2,625	2,610	2,925	3,168
C 425 lb cmt.	cy	9,600	7.90	8.20	9.58	10.00	75,840	78,720	91,968	96,000
D 385 lb cmt.	cy	100	7.75	7.90	9.00	9.70	775	790	900	970
Add for:										
High early st cmt	cy	500	1.00	0.75	1.40	1.50	500	375	700	750
Black color admix	lb	500	0.15	0.09	0.20	0.18	75	45	100	90
CaCl2 anti-freeze	lb	2,500	0.04	0.05	0.07	0.07	100	125	175	175
Pozzolith	lb	500	0.00	0.18	0.09	0.20	0	90	45	100
Sat., Sun., holiday del	cy	500	1.00	1.00	0.75	1.50	500	500	375	750
5PM–8AM del	cy	250	1.00	1.00	1.00	1.50	250	250	250	375

Buildings at Switchyard Central Valley, California

Installing electrical equipment accounted for 36 percent of the $978,720 low bid on the Tracy Switchyard, Delta District, Central Valley Project, California. The other 64 percent of the bid was for structures.

The unit prices which follow cover these structures and give building unit prices in unusual detail for sq. ft. of walls, floors, insulation, roofing.

The Bu. of Reclamation, L. N. McClellan, chief engineer, Denver, Colo., took bids September 29, 1949. Seven bids ranged from a low of $978,720 to a high of $1,527,522, a 56% spread.

Minimum wage rates include: carpenters $2.16, cement finishers $2.15, electricians $2.50, glaziers $2.00, ironworkers: ornamental $2.25, reinforcing $2.15, structural $2.40, laborers $1.55, plasterers $3, plumbers $2.375 roofers $2.16.

The government furnishes all electrical material and equipment, metals and other materials where unit prices show "i" for install, or where apply, erect or place are shown not accompanied by "f" for furnish.

Work had to start within 30 days of notice to proceed. All work required for operation of pumping units 5 and 6 in the pumping plant had to be complete in 500 days ($60 a day liquidated damages), all remaining work 500 days ($40 per day liquidated damages).

Both rail and highway transportation are available.

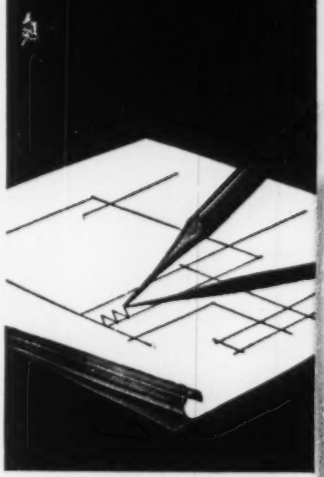
1 Stolte, Inc., United Concrete Pipe Corp., Duncanson Harrelson Co., Ralph A. Bell, Richmond, Calif. (Contractor) ..... ($623,190)* $978,720
2 Donovan-James-Wismer and Becker, St. Paul, Min. $1,069,988

* Amounts covered by unit prices which follow and which exclude installation of electrical work.

Items	Quantity	Unit Prices 1	2
Excav for swyd	cy	4,500	$.25	$.50
Excav for struct	cy	32,000	.82	1.00
Overhaul	sta cy	150,000	.011	.025
Compacted fill	cy	30,000	.39	.60
Excav, borrow	cy	9,000	.25	.60
Backfill	cy	15,300	.65	1.00
Compact backfill	cy	15,000	2.07	2.80
Pea-grav fill, f & p	sy	700	.78	2.43
Grav surfg in swyd	cy	6,100	2.93	3.25
Track rls on timb ties, i. tr f		450	10.12	12.00
Track rls on concr, i	lb	19,000	.06	.067
Cmt, f & hndl	bbl	7,700	3.99	4.25
Reinf bars, f & p	lb	915,000	.08	.083
Concr, contr bldg	cy	2,100	40.24	68.30
Concr, swyd struct	cy	1,070	28.92	43.20
Concr, tunnels	cy	2,200	30.48	52.10
Concr, duct bnks	cy	200	19.40	18.40
Constr backfill-conduit instlatn 1' & less deep.	lf	4,900	.59	3.07
Over 1' under 2' 6"	lf	950	.71	3.50
2' 6" & over	lf	650	1.17	4.50
Constr contr joints	lf	90	.85	2.50
Rub water stops, p	lf	250	1.32	1.84
Metal seals, f & p	lf	1,800	3.05	2.37
Non-extr bit-fiber jt flr, f & p	sf	350	.50	.54
Corkbd jt flr, f & p	sf	700	1.22	.41
Roof insul 2", f & p	sf	6,200	.40	.415
Bit-satd-felt roofing, f & p	sf	7,000	.38	.57
Membr waterprfg, p	sf	1,830	.33	.75
Damp-proofing, f & a	sy	725	.55	.95
Asph tile, f & i	sf	5,100	.30	.42
Asph cove bases, f & i	lf	700	.43	.46
Bonded-concr flr finish, on flrs	sy	770	5.50	4.80
on strs	sy	12	10.00	10.05
Concr wall bases	lf	70	2.20	.56
Susped met lath & plast. ceilgs, f & i	sy	550	8.23	8.35
Framing & met lath & plast part, f & i	ls	.....	2.90	280
Glass-block, panels, f & i	sf	85	9.00	3.06
Met toilet-stall part, i	lf	60	2.00	3.90
Steel swinging doors, f & i	sf	730	15.40	6.08
Steel swingg front-entr. door, f & i	ls	.....	2,980	1,191
Steel-sash wds, f & i	sf	660	3.00	3.25
Plumb fixt, appli, & accessories, f & i	ls	.....	1,690	3,128
Erecting struct st for switchyards	lb	760,000	.054	.0503
for control-cable duct	lb	100,000	.05	.0503
for untanking structure	lb	45,000	.05	.0528
Stl stubs in fdns, p	ea	88	24.50	21.40
Contr-cable duct side walls & roof deck, erect	ls	.....	3,444	4,862
Hoist for untanking structure, i	lb	35,000	.04	.024
Transformr transfer car, assemble	lb	10,000	.05	.088
Sgle-rail metal railgs, f & i	lf	30	2.75	4.00
Dble-rail metal railgs, f & i	lf	110	4.33	5.22
Cable tray sup, i	lb	220,000	.21	.156
Misc metalwork, i	lb	20,000	.16	.308
Sht met ducts for air-cond sys, f & i	sf	1,800	1.71	1.39
Exhaust fans, i	lb	500	.44	.35
Grilles, registers, air diff & dampers for air cond, i	lb	400	.37	.48
Heat pumps, i	lb	5,000	.13	.07
Met pipe, fits, & vlvs, under 6", i	lb	76,000	.15	.263
under 6" f & i	lb	6,000	.39	1.09
6" & over, i	lb	80,000	.26	.32
Br & cop pipe, tubg, fitgs, & valve, i	lb	800	.85	.62
Chr-plated pipe, coupl & escutheon plates, f & i	lb	75	2.44	1.95
Oil storage tanks, i	lb	40,000	.04	.029
Pumps, cumpr, & oil purif, i	lb	3,000	.26	.175
Ash-cmt pipe, under 8", i	lb	17,000	.12	.055
8" & over, i	lb	102,000	.10	0304
Hose houses, erect	ea	9	150	109.5
4" VCSP, f & l	lf	1,050	1.10	.743
6" VCSP, f & l	lf	1,400	1.83	1.19
8" CSP, f & l, cmt jts	lf	100	1.52	1.76
12" CSP, f & l, cmt jts	lf	1,500	2.19	2.68
12" concr culv pipe f & l, cmt jts	lf	300	2.93	4.13
6" concr sew pipe, f & l uncmt jts	lf	450	1.22	1.26
Cabinets in control building, f & i	lb	.....	1,154	719
Wood-casement windows, f & i	ls	.....	33	198
Pl-gls windows, f & i	sf	126	4.00	2.28
Swyd fence, f & i	lf	3,050	2.10	2.12

f & p furnish & place
f & a furnish & apply
f & h furnish & handle
f & i furnish & install
f & l furnish & lay

TRACING CLOTH for HARD PENCILS



● Imperial Pencil Tracing Cloth has the same superbly uniform cloth foundation and transparency as the world famous Imperial Tracing Cloth. But it is distinguished by its special dull drawing surface, on which hard pencils can be used, giving clean, sharp, opaque, non-smudging lines.

Erasures are made easily, without damage. It gives sharp, contrasting prints of the finest lines. It resists the effects of time and wear, and does not become brittle or opaque.

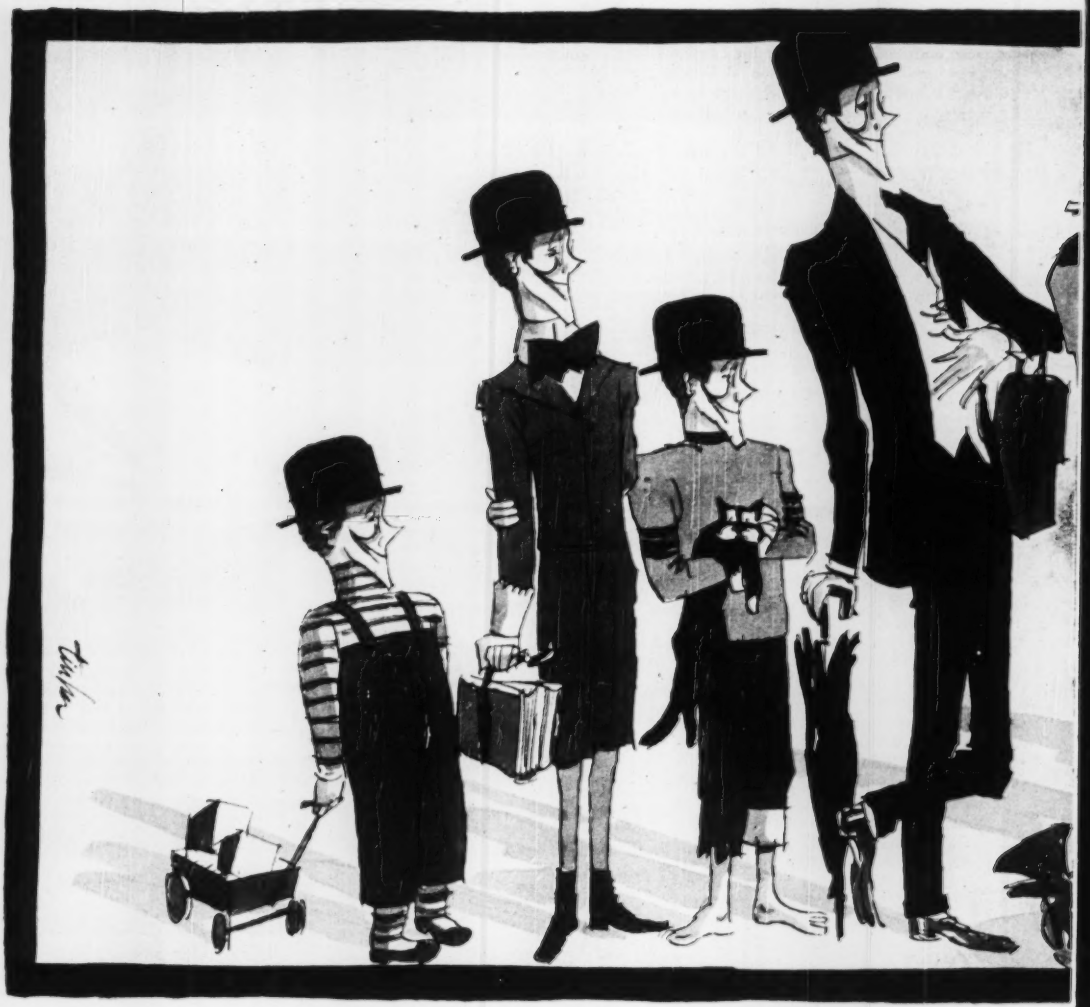
Imperial Pencil Tracing Cloth is right for ink drawings as well.

IMPERIAL PENCIL TRACING CLOTH

SOLD BY LEADING STATIONERY AND DRAWING MATERIAL DEALERS EVERYWHERE.

MY!... BUT SUCCESS

(Portrait of a growing family)



If you study the picture above, you'll notice a certain family resemblance . . .

There's Awful Friendly, Plenty Friendly, Utterly Friendly and a flock of others whose names slip me now.

You see the American Mutual family has grown so rapidly in the last 4 years, even I'm amazed!

In this short period, we've practically doubled the amount of business we do! (And we were up among the leaders to begin with.)

I say this, not to brag . . . but to let you know that when you join the American Mutual family as a policyholder, you're signing up with one of the healthiest companies in America today!

Why did almost *twice* as many people come to us for protection recently? . . .

Because we offered them the chance to get *a dollar's worth of protection for 80 cents* in almost every case.

Because our special Specialized Engineering Construction Service, which we feel is the greatest extra in insurance, has

AMERICAN MUTUAL...*the first American liability insurance company*

© 1949 AMERICAN MUTUAL LIABILITY INSURANCE COMPANY

CERTAINLY BREEDS!

by Mr. Friendly

demonstrated year after year that we can help businessmen reduce costly accidents, and increase plant efficiency and profit at the same time!

Because we've helped cut premium costs for hundreds of companies to way below the average for their field! (As much as 50% below average in some cases.)

The point is . . . we'd like to have you join our big Friendly family. We'd like to help you in every way.

And personally, I get a kick out of being head of a family with thousands and thousands of new members every year.

Beats quintuplets any day!

— MAIL THIS COUPON NOW — WITHOUT DELAY! —

Dept. O-90, American Mutual Liability Insurance Company
142 Berkeley Street, Boston 16, Massachusetts
Without obligation, please *rush* to me more information on the All-American Plan so that I may be richer and happier!

*Name*_____

*Street*_____

*City*_____ *State*_____

Out Ahead Again FOR 1950!

New "Weight-Saving" Diesel Tractors • New Middle-Weight Six-Wheelers
New Power and New Features in Light and Medium Duty Models

Once again GMC leads the truck transport parade . . . once again GMC introduces improvements in design and function . . . once again GMC widens the scope of truck performance and truck usefulness.

For 1950 there's a new heavy duty 2½-ton "470" series . . . two new "400" and "620" series six-wheelers . . . two new "weight-saving" Diesel-powered tractors built to handle maximum legal payloads in the 45,000-55,000 pound weight range . . . a new 1½-ton "280" series of 11,000 pounds GVW.

Construction contractors, oil field operators and movers of earth and rock will find a model ideally suited to their hauling needs in the GMC line which ranges from 4,600 pounds GVW to more than 90,000 pounds GCW. The two new six-wheelers, for example, with 24,000 and 32,000 pound GVW ratings are particularly well adapted to construction, oil field and quarry transport jobs.

These new models combine to offer GMC power, dependability and economy to many more operators . . . and all along the line GMC's move even further out in front. New camshafts, valves and manifolds step up the power in light-medium models. Wider seats, more headroom and improved sealing increase their cab comfort. And there are new chassis features, including new hydraulic and optional air brakes on 2½-ton models, new front springs with airplane-type shock absorbers on light trucks. Your nearest GMC dealer has complete facts. See him soon.

GMC
GASOLINE • DIESEL
TRUCKS

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

Ont., Renfrew—B.A. 1/24—Town, J. T. Moran, Mayor, L. R. Barrand, clk., water filtration plant and water lines, Contr. A, filtration plant, clear water reservoir, low lift pump house and intake, Contr. B, supply, install filter equip.; Contr. C, laying watermains, sewers; Contr. D, plumbing, heating; Contr. E, electrical work, Approx. $260,000. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. CD 12/2.

Ia., Dubuque—B.A. 1/25—City, City Hall, water softening plant, Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago, Ill., engrs. CD 11/30/44.

Va., Altavista—B.A. 1/26—At office Thomas B. Noland, town mgr., Altavista, WW, incl. Proposal 1, 2 deep well turbine type pump units complete with motors, controls and starting equip.; Proposal 2, excavation, concrete work and equip. for development collection basin at spring, pump station and grading protection of spring; Proposal 3, furnishing c. i., fitting valves, etc.; Proposal 4, installing items necessary for force main. Plans deposit $20. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, engrs.

SOON LETS CONTRACT

Ga., Dublin—J. P. Stevens Co., Dublin, soon lets contract WW plant. J. E. Sirrine & Co., 215 S. Main St., Greenville, S. C., engrs.

LOW BIDDERS

Calif., Monterey Park—City Council, 320 W. Newmark Ave., Dec. 19, Westside Water system imprvs., 300,000 gal. reservoir, pump station, etc., from Macco Corp., 14409 S. Paramount Blvd., Clearwater. $52,000. Est. $59,000. CD 11/30.

Calif., San Diego—City, City Council, Civic Center Bldg., Dec. 20, Kearny Mesa Pipe Line, Sect. I, Schedule I, furnish 26,830 ft. steel pipe with rubber gasket joints, from American Pipe & Constr. Co., 4635 Firestone Blvd., South Gate, $285,734***Schedule IA, installing 26,830 ft. steel pipe with rubber gasket joints, from N. P. Van Valkenburg, 8609 San Vincente St., South Gate, $142,332***Schedule II, 26,830 ft. steel with welded joints, from Southern Pipe & Casing Co., Box C, Azusa, $259,879***Schedule II a, installing 26,830 ft. steel pipe with welded joints, from Chas. J. Dorfman, 124 N. La Brea Ave., Los Angeles, $162,354. CD 12/6.

La., Lockport—Town, Town Hall, Dec. 13, WW, imprvs. incl. watermain extens. and water treatment plant, from Union Constr. Co., 2634 Almonaster Ave., New Orleans, Zone 17. $117,260. CD 11/22.

La., Marrero—Jefferson Parish Waterworks Dist. 3, Marrero, Dec. 21, WW exten., from Clement Betpouey, Jr. & Co., Canal Bldg., New Orleans, $36,585. CD 12/8.

La., Zachary—City, City Hall, Dec. 12, WW, sys. addn., from Red River Constr. Co., P. O. Box 3132, Queensboro, Shreveport. $56,000. CD 12/9.

▲ **Mich., Detroit**—City Bd. Water Comrs., Water Bd. Bldg., 735 Randolph St., Zone 26, Dec. 22, Northeast Tunnel, from S. A. Healy, 6561 E. Seven Mile Rd., & Gargaro Co., Inc., 40 E. Seven Mile Rd. $5,587,937. Est. $5,000,000. CD 12/1.

N. C., Lincolnton—Town, L. D. Warlick, mayor, Lincolnton, Dec. 21, water imprvs., Div. 1, from Setzer Constr. Co., Hickory, $78,430. CD 12/12.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Calif., Bryte—B.A. 1/20—Bryte Sanitary Dist., Bryte, sanitary sewage collection, outfall and treatment works sys. Approx. $50,000. Plans deposit $25. L. Cedric Macabee, 156 University Ave., Palo Alto, engr.

LOW BIDDERS

Calif., Mariposa—Mariposa Public Utility Dist., Box 15, Dec. 20, dam, spillway and outlet works on Stockton Creek, near here, from John Delphia, Box 313, Patterson, $63,413. CD 12/9.

Calif., Monrovia—City Council, 301 S. Myrtle Ave., Dec. 19, 29,655 ft. 8 to 15 in. sanitary sewers in various streets, from Doty Bros., 1036 E. Ramona Ave., Bellflower, $114,097.

O., Lakewood—City, 14532 Lake Ave., approx. 2,000 ft. 24 to 48-in. sanitary sewers in Edgewater Dr. from Cove Ave., to Highland, from Kalitl Co., 4060 W. 150 St., Cleveland, $54,315. Est. $80,000. CD 9/1/48.

Wis., Milwaukee—City, Dec. 22, combined sewer in E. Bradford Ave., from R-W Constr. Co., 4831 W. State St., Zone 8, $193,608.

CONTRACTS AWARDED

Calif., Riverside—City Council, 3606 7 St., sanitary sewers in Magnolia Center, Central Ave., Arlington, Magnolia, Brockton and Palm Aves., Arch Way, Washington St., to Robert Vlacich, 2901 Worthen Ave., Los Angeles. $220,429. Awarded 12/20. H. H. Irvine, city engr. CD 11/15/44.

Ga., Edison—City, sanitary sewer imprvs., incl. treatment plant, to M. G. Aldridge, Macon, $90,500. Bids 12/1. CD 11/21.

Ont., Port Credit—Municipality, sewers to Swansee Constr. Co., 363 Rogers Rd., Toronto, $167,320. Est. $100,000. Bids 10/3. CD 9/26.

BRIDGES

LOW BIDDERS

▲ **New York**—Bureau Contracts & Accounts, Albany, Dec. 28, elimination grade crossings in City of Rochester between tracks of New York Central and Baltimore & Ohio Railroads and Hague, Ames, York, Colvin and Childs Sts., incl. change in track grade line, construct two 46 ft. span I-beam bridges and 3 pedestrian underpasses, construct 0.59 mi. b. conc. paving on Ames and Childs Sts., PSC. 4763, 5938, Monroe Co., from Bates & Rogers Const. Corp., 600 W. Jackson St., Chicago, Ill., $1,366,470, est. $1,554,000*** construct 65 ft. I-beam bridge carrying tracks of West Shore R. R. over Route 85 in village of New Scotland, incl. 0.44 mi. 24 ft. wide c. conc. paving on approaches, FG. RC. 49-126, Albany Co., from John Arboria, Inc., W. Cedar St., Poughkeepsie, $268,101, est. $362,000***construct 87 ft. span I-beam bridge over Kinderhook Creek on County Rd. 16 in hamlet of Garfield, incl. 0.58 mi. bit. treated gravel pavement on the approach roads, etc., FA.SS. 49-30, Rensselaer Co., from W. Robinson Martin, Manchester Center, Vt., $80,331, est. $100,000***cancelled bids to have been opened Dec. 28, construct 47 ft. span I-beam grade separation structure carrying Route 17 under the tracks of New York, Ontario & Western R. R., at point 1 mi. east of Wurtboro, incl. 0.4 mi. c. conc. paving FG. RC. 49-129, Sullivan Co., est. $385,000. CD 12/6.

CONTRACTS AWARDED

▲ **N. Y., New York**—President Manhattan Boro, Municipal Bldg., Zone 7, completing viaduct overpasses between Franklin D. Roosevelt Dr. and 1 Ave. at E. 42 and E. 48 Sts., etc., to Lynn Constr. Co., 11 W. 42 St., Zone 18, $1,019,514. Bids 11/10. CD 12/6, under L.B.

New Brunswick—Dpt. P. Wks., Fredericton, substructure and approaches four 284 ft. and one 194 ft. span bridge over Northwest Miramichi River, to Foundation Maritime Ltd., 135 Lower Water St., Halifax, N. S., $500,000. Bids 12/9. CD 12/28, under L.B.

STREETS AND ROADS

BIDS ASKED

La., Sulphur—B.A. 1/31—City, City Hall, 48,057 sq. yd. street paving and 9,832 lin. ft. integral curb and gutter, F. Shutts' Sons, 324 Pujo St., Lake Charles, engrs.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

✦	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

LOW BIDDERS

Calif., San Francisco—Dpt. P. Wks., City Hall, Dec. 21, remove tracks and imprv. Bryant St., Spec. 20591, from Chas. L. Harney, 575 Berry St., $204,886. CD 12/9.

Delaware—State Hy. Dpt., Dover, Dec. 21, Contr. 1009, Philadelphia Pike, F. A. Proj. F-1 (4), from Henry C. Eastburn & Sons, Newark, $436,353; Contr. 791, Wilmington Ave., F. A. Proj. F166 (7), from James Julian, Elsmere, $152,483, both Newcastle Co. CD 12/1.

Indiana—State Hy. Comn., Samuel C. Hadden, chn., State House Annex, Indianapolis, Dec. 20, c. conc. paving, 4.239 mi. State Rte. 109, East by-pass of Anderson from State Rte. 32 to State Rte. 9, Madison Co., from Bontrager Constr. Co., Elkhart, $370,705, Est. $479,120. CD 11/29.

Louisiana—State Hy. Dpt., Baton Rouge, Dec. 21, sand clay grav. surf. del. spot-dumped, spread and shaped, 46 mi. on certain public roads, Proj. 703-06-21, Franklin Parish, Items 3-1-7A, 3-1-7B, 3-1-7C, 3-1-7H, 3-1-7I from R. G. Cruse Lumber Co., Inc., Sicily Island, $49,736; Items 3-1-7D, 3-1-7E, 3-1-7F, 3-1-7G, from W. R. Slay Constr. Co., Sicily Island, $50,321. CD 12/15.

New York—Bureau Contracts & Accounts, Albany, Dec. 28, construct 1.05 mi. Niagara Thruway along route of Perry Blvd. between Court St. and Porter Ave. in city of Buffalo, incl. 0.86 mi. twin 37 ft. wide c. conc. paved arteries separated by 20 ft. mall on the Thruway, 0.19 mi. b. conc. paving connections at Porter Ave. and Court Sts., Erie Co., from Main Constr. Corp., 869 Ellicott Rd., Depew, $442,553. Est. $514,000. CD 12/6.

✦ **Washington**—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, access highway to Chief Joseph Dam site, Okanogan Co., Serial No. CIVENG-45-108-50-38, Schedule A, clearing, grading, placing ballast and crushed stone surf., stockpiling of mineral aggregate and constr. small drainage structures, from Strong & MacDonald, 4045 Ruston Way, Tacoma, $612,215; Schedule B, hauling, mineral aggregates for pavement and crushed stone for shoulders, mixing and placing b. conc, placing shoulder materials from D & H Paving Co., Wenatchee, $179,182. CD 11/30.

CONTRACTS AWARDED

Kentucky—State Hy. Dpt., Frankfort, traffic bound limestone 5.063 mi. RS 47-679 Vertress-Flaherty Rd., Hardin Co., to Geo. W. Eady Co., 340 Byrne St., Louisville, $95,878. CD 11/2.

Tex., Fort Worth—Tarrant Co. Courthouse, road resurf. and bridge, Precinct 1, Approx. $200,000; Precinct 2, $165,000; road reconstruction and surf., Precinct 3, $150,000; Precinct 4, $125,000, force account. Grand total $640,000. Matt Walker, c/o owner, co. engr. CD 8/16.

Virginia—State Hy. Dpt., Richmond, 2.11 mi. six lane divided concrete roadway on Granby St. between Lafayette River Bridge and Route 168, Route 170, Norfolk Co., to Ames & Webb, Inc., 3145 Broad Creek Rd., Norfolk, $573,390. Bids 12/20. CD 12/27, under L.B.

EARTHWORK, WATERWAYS

BIDS ASKED

✦ **Minnesota**—B. A. After 1/16—U. S. Eng., 1217 Post Office Bldg., St. Paul, Zone 1, deepening, widening, straightening about 15 mi. channel in Wild Rice River south of Ada, about 1,400,000 cu. yd. channel excav. etc. Approx. $28,000. CD 4/21/44.

Ia., Dakota City—B. A. 1/18—Humboldt Co., c/o County Auditor, Court House, approx. 35,074 cu. yd. channel excav., clearing, grubbing, etc. Drainage Distr. 19. Plans deposit $10. Rowat & Murray, Estherville, engrs.

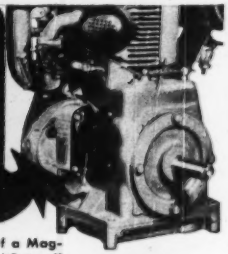
Kansas—B. A. 1/19—State Fish & Game Comn., at office Dave Leahy, dir., Pratt, constr. Walnut Creek Diversion Dam Cheyenne Bottoms, Barton Co., near Great Bend. Plans deposit $10. Wilson & Co., 223 N. Santa Fe St., Salina, engrs. CD 5/5/48.

✦ **New York**—B. A. 1/25—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore 3, Md., Arkport Dam, Gage Well, Arkport Reservoir, Canisteo River, Serial No. CIVENG-18-020-50-13. CD 12/13.

✦ **Maryland**—B. A. on or About 2/7—U. S. Eng., 24 St. and Maryland Ave., P. O. Box 1715, Baltimore, Zone 3, maintenance and impv. dredging in Brewertown and Fort McHenry Sections and Riverview Anchorage 2, Baltimore Harbor and channels located about 3 statute mi. and 7 statute mi. respectively southeast from Fort McHenry, Baltimore, CIVENG 18-020-50-16.

▲✦ **Arkansas**—B. A. 2/9—U. S. Eng., P. O. Box 60, Vicksburg, Miss., constr. Blakely Mountain Dam and intake structure on Ouachita River, Garland Co., approx. 2 mi. west of Mountain Pine and 10 mi. northwest of Hot Springs, CD 2/18/44.

Why WISCONSIN HEAVY-DUTY Air-Cooled ENGINES Have a Rotary-Type OUTSIDE MAGNETO



Perhaps you have never given much thought to the placing of a Magneto on an engine, nor whether it's of the "flywheel" or "Rotary" type. It's an important point because the magneto is really the heart of the engine. When it fails, your power fails.

Wisconsin engineers have found through long experience and experimentation that the best place to put the magneto, not only for convenient accessibility but for better ignition performance over an extended period of time is on the OUTSIDE . . . with an independent, direct drive from the engine to the Magneto. The Rotary Type high tension magnetos used by Wisconsin Air-Cooled Engines provide the greatest protection against ignition troubles because the Magneto itself is a complete, independent operating unit that doesn't rely on an unrelated part of the engine for its successful operation. It's tightly sealed against dust and moisture, of course, so it isn't affected by wet weather or snow and there is no chance of it getting "fouled up". And it's equipped with an Impulse Coupling that provides a quick, hot spark for easy starting in any weather, in any climate, a feature that can't be incorporated in flywheel-type magneto.

Yes, the MAGNETO is important . . . both as to type and placing on the engine. It's the right kind and in the right place on Wisconsin Heavy-Duty Air-Cooled Engines. Specify "Wisconsin" for your 3 to 30 hp. power needs. . . . Descriptive literature on request.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 14, WISCONSIN

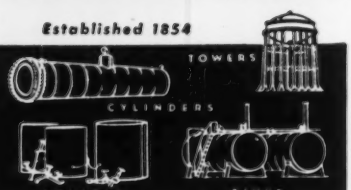
COLE TIMBER-TREATING CYLINDERS

● Whatever your needs in pressure vessels—creosoting cylinders, bubble-towers, gas scrubbers, pressure spheres, gas storage tanks, etc.—you can depend on COLE for vessels that are correct in design and permanently leakproof at the welded or riveted joints. We also design and fabricate elevated tanks, acid tanks, dye vats, digestors, standpipes, storage tanks, etc. Write for latest Cole Catalog—"Tank Talk."

R.D. COLE MANUFACTURING CO.

NEWNAN, GA.

Established 1854



† **Kentucky**—B. A. About 2/15—U. S. Eng., Madison Ave. and 8 St. W., Huntington 18, W. Va., local protection project Sect. 2, approx. 6,000 lin. ft. rein.-con. wall, appurtenant toe drain, 5 wall openings, 2 stop log storage houses, incl. railroad track relocation and 24 in. interceptor sewer, in Ashland, Boyd Co., along left descending bank of Ohio River, CIVENG 46-022-50-64.

† **Kentucky**—B. A. About 2/20—U. S. Eng., Madison Ave. and 9 St. W., Huntington 18, W. Va., local protection proj., Sect. 2, incl. approx. 4,400 ft. earth levee, approx. 3,600 ft. 27- to 54-in. interceptor sewers, and 8x8 ft. culvert about 325 ft. long, 2 concrete gate wells, in Maysville, Mason Co., along the left descending bank of the Ohio River, CIVENG 46-022-50-65.

† **Minnesota**—B. A. After 2/20—U. S. Eng., 1217 Post Office Bldg., St. Paul, Mustinka River Channel Imprvt., Red River of the North Drainage Basin, deepening, widening straightening about 32 mi. of channel of Mustinka River, Mustinka State Ditch, Five Mile Creek and County Ditch 42, 2,900,000 cu. yd. excav., clearing, snagging 7 mi. reach of Twelve Mile Creek. CD 4/21/44.

† **Montana**—B. A. About 3/15—U. S. Eng., Fort Peck Dist., Fort Peck, installing third generating unit (35,000-kw) with associated equipment, appurtenances, at Fort Peck Power House near east end of Fort Peck Dam, Missouri River approx. 20 mi. southeast of Glasgow, CIVENG 24-016-50-30.

† **Minnesota**—B. A. After 5/2—U. S. Eng. 1217 Post Office Bldg., St. Paul, constr. Orwell Dam in Red River of the North; compacted earth embankment with maximum height of about 50 ft. and 1,500 ft. long with concrete spillway and control works, incl. tainter gate 33 ft. wide, 28 ft. high, etc. 267,000 cu. yds. excav. etc. CD 4/21/44.

LOW BIDDERS

† **Iowa**—U. S. Eng., Clock Tower Bldg., Rock Island, Dec. 20, levee imprvs. at Iowa River and Flint Creek Dist. 16, CIVENG 11-117-50-18, from Wapello Constr. Co., Quincy, Ill., $41,837. Est. $62,215. CD 12/5.

† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, Dec. 20, furnishing, installing operating machinery and electrical sys. for Calcasieu Lock, Calcasieu Parish, Inv. 50-130, from New Orleans Armature Works, 1031 Magazine St., New Orleans, $221,427. CD 11/25.

† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, Dec. 20, maintenance dredging approx. 32 mi. Gulf Intracoastal Waterway, Terrebone and Iberia Parishes, from Hancke Service, Inc., 814 Howard Ave., New Orleans, $248,880. CD 11/28.

Tenn., Memphis—City, City Hall, rejected bids Dec. 14, drainage imprvs. from L. & N. R. R. to Dalton St. L. B. $94,998. CD 12/22, under LB.

Que., Matane—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Dec. 21, breakwater reconstr., from Gulf Maritime Ltd., Matane, Approx. $296,255. CD 12/12.

CONTRACTS AWARDED

La., Livingston—Livingston Parish Police Jury, approx. 400,000 cu. yd. channel excav., to C. W. Vollmer & Co., c/o DeSoto Hotel, New Orleans, $58,680. Bids 12/14. CD 12/1.

N. S., Lunenburg—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dredging in harbor, to J. P. Porter Co., Ltd., 1010 St. Catherine St. W., Montreal, Que., Approx. $75,000. Bids 12/21. CD 12/14.

AIRPORTS AND AIRBASES

BIDS ASKED

† **Fla., Jacksonville**—DISTRIBUTION SYSTEM, etc.—B. A. 1/30—Construction Officer, Bldg. 902, U. S. Naval Air Station, steam distr. sys., pump houses, etc., Spec. 2317. Plans deposit $15.

CONTRACTS AWARDED

† **Miss., Biloxi**—AIRPORT IMPRVS.—U. S. Eng., 2301 Grant St., Mobile, Ala., outside utilities and site imprvs., Keesler Air Force Base, CIVENG 01-076-50-25, to E. L. Kennedy, 821 2 St., Gulfport, $126,681. CD 10/26/48.

Alta., Edmonton—AIRPORT BUILDINGS—Government of Canada, Ottawa, Ont., buildings and other work at airport, to Yukon Constr. Co., 9907 103 St., $100,000. CD 3/3/48.

PUBLIC BUILDINGS

BIDS ASKED

▲ **Md., Upper Marlboro**—SCHOOL—B.A. 1/17—Prince Georges Co. Bd. Educ., academic high school, Tilden and 56 Sts., Bladensburg, approx. $1,000,000. Ross & Walton, 3510 Rhode Island Ave., Mt. Ranier, archts.

N. C., Yanceyville—SCHOOL—B.A. 2/17—Caswell Co. Bd. Educ., Holland McSwain, supt., Courthouse, classroom unit for Caswell Co. Training School. Plans deposit $25, $10 each for electrical heating and plumbing, H. Raymond Weeks, Inc., 504 Snow Bldg., Durham, archts.

O., Rocky River—HIGH SCHOOL—B.A. 1/17—Bd. Educ., 20310 Detroit Rd., high school addn., Detroit and Wagar Rds. $750,000. Fulton, Krinsky & Delamotte, 6014 Euclid Ave., Cleveland, archts. CD 11/21.

▲ **N. Y., Newark**—INFIRMARIES—B.A. 1/18—Dpt. Mental Hygiene, Albany, Zone 2, infirmary bldgs. at State School. $2,045,921. Plans deposit $30. Extended

date. De Young, Moscowitz & Rosenberg, 205 E. 42 St., New York, Zone 17, archts. CD 11/21.

Miss., University—DORMITORY—B.A. 1/19 — State Bldg. Comn., New Capitol Bldg., Jackson, girls' dormitory at University of Mississippi, $300,000. Plans deposit $25. CD 11/18.

S. D., Hot Springs — MENS — B.A. 1/21 — State Bd. Mgrs., Pierre, mens bldg. at State Soldiers Home, $300,000. Ewing & Forrette, Rapid City, archts. CD 11/30/45.

Ill., Skokie—SCHOOL—B.A. 1/23—School Dist. 73, Skokie, 1 story, 100x250 ft., steel, brick, concrete East Prairie School Addn., 7608 E. Prairie Ave. $260,000. Plans deposit $10. Berger, Kelly & Samuelson, Lincoln Bldg., Champaign, archts.

▲ **Conn., Meriden** — HOUSING — B.A. 1/25 — Housing Authority, 37 Sale Terrace, housing. $1,102,000. Harrison, Ballard & Allen, 123 E. 77 St., New York, N. Y., archts. CD 12/21.

▲ **D. C., Wash.** — HIGH SCHOOL — B.A. 1/26 — Dist. Comrs., District Bldg., Springarm High School for negro students, 24 St. and Benning Rd. N. E. $3,600,000. Plans deposit $50. Extended date. Merrill A. Coe, District Bldg., municipal archt. CD 11/28.

▲ **N. Y., Middletown**—HOSPITAL—B.A. 2/1—Dpt. Mental Hygiene, State Office Bldg., Albany, hospital at State Homeopathic Hospital. $4,500,000. C. J. White, c/o owner, archt.

† **N. M., Albuquerque** — ATTENDANTS QUARTERS — B.A. 2/7—Veterans Admin., Munitions Bldg., Wash. 25, D.C., converting Attendants Quarters Bldg. 10 to the medical wards for Veterans Admin. Hospital, Spec. No. 5001. CD 2/4/48.

▲ **Ia., Newton**—School—B.A. 3/8—Indian School Dist., Newton, high school, $1,200,000. CD 12/13.

LOW BIDDERS

Calif., Martinez—HIGH SCHOOL CLASSROOM, etc.—Alahambra Union High School Dist., Martinez, Dec. 22, high school bldgs. incl. 2 story, concrete classroom bldg., steel frame, wood shop, steel frame, wood gymnasium and locker room bldg., from B. & R. Constr. Co., 110 Market St., San Francisco, $478,743. CD 12/5.

La., Baton Rouge—DORMITORY—Louisiana State University, Baton Rouge, Dec. 16, 2 story, bsmnt., concrete, brick, tile athletic dormitory, from Barksdale & LeBlanc, 1835 Shada Ave. $374,000. CD 12/5.

Mich., Waterford — SCHOOL — Waterford Twp. School, 1150 Scott Lake Rd., Dec. 14, 2 story, L-shaped, 63x229 and 62x94 ft. rein. con., masonry high school, from C. H. Ressdorf, Inc., 831 Fox Bldg., Detroit, $709,370. CD 11/29.

Miss., Clarksdale—HOUSING—Clarksdale Housing Auth., Clarksdale, Dec. 21, 40 housing units, from L. B. Priester & Son, P. O. Box 669, Meridian. $305,000. CD 11/30.

N. Y., Thiells—POWER HOUSE—Bureau Contracts & Accounts, Albany, Dec. 21, general contract power house addn. Letchworth Village, from Gelco Builders, 180 E. 123 St., New York, $476,483; heating, from The Interboro Co., 235 E. 34 St., New York, $527,000.

Tenn., Knoxville—HIGH SCHOOL—City, City Hall, Dec. 22, West Knoxville High School, from Johnson & Willard, 422 W. Front Ave., $871,203. CD 11/21.

B. C., Vancouver — RESIDENCE — Province of British Columbia, Parliament Bldgs., Victoria, Dec. 21, women's residence group, incl. 4 rein.con. dormitories, from Northern Constr. Co., & J. W. Stewart Ltd., 1304 Hornby St., $469,900. CD 12/6.

B. C., Vancouver—ADMINISTRATION—Vancouver School Bd., 590 Hamilton St., Dec. 21, 5 story, 125x180 ft., hard-pressed brick, tile rein.-con. administration bldg., from Smith Bros. & Wilson Ltd., 1267 Richards St., $567,123. CD 11/25.

Que., Asbestos—SCHOOL—Asbestos-Danville Consolidated School Bd., R. H. Luman, secy., rejected bids Oct. 12, high school. Approx. $275,000. Revising plans. CD 10/6.

CONTRACTS AWARDED

Mass., Boston—LAUNDRY—City, G. Frank MacDonald, Dpt. Institutions, City Hall Annex, brick, steel laundry, Long Island Hospital, to Construction Units, Inc., 294 Washington St., $199,900. Bids 12/16, CD 12/12.

▲ **N. Y., Long Island City**—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 7, general contract for Sect. II, incl. comfort station and bldgs. Numbered 18 to 31 (inclusive) of Ravenswood Houses Proj. No. NYC-20 in area bounded by 34 Ave. 21 St., 36 Ave. and 12 St., Queens Boro, to Caye Constr. Co., 356 Fulton St., Brooklyn, Zone 1, $4,438,990***heating and ventilating, to Derks Heating Co., 43-32 33 St., $515,000***plumbing, to Lipsky & Rosenthal, Inc., Lexington Ave. and 115 St., New York, Zone 29, $595,700. Grand total $5,549,690. Bids 12/6. CD 12/8, under LB.

N. D., Jamestown—EMPLOYEES—State Bd. Admin., Bismarck, general contract employees bldg. at State Hospital, to E. A. Moline, Jamestown, $298,500. Bids 12/20. CD 11/23.

Tenn., Cookeville—DORMITORY—State of Tennessee, Nashville, men's dormitory at Tennessee Polytechnic Institute, to D. R. Selley Co., 409 4 Ave. S. Nashville, $476,739. Bids 12/23. CD 12/6.

B. C., Vancouver—HOUSES—Central Mortgage & Housing Corp., 360 Homer St., Vancouver, 125 four and five room frame houses, to Biltmore Constr. Co., Ltd., 7441 Granville St., Vancouver, Approx. $650,000. Bids 12/21, awarded 12/22. CD 12/15.

▲ **Que., Montreal**—POSTAL STATION—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Postal Station B, University and Cathcart Sts., to A. F. Byers Constr. Co., Ltd., 5674 Western Ave., $1,263,000. Bids 10/5. CD 110/11, under LB.

Que., Ville St. Laurent—SCHOOL—Protestant School Bd., 102 Cardinal St., school, Norgate Development off O'Brien Blvd., to Tetrault Brothers Ltd., 1200 Church Ave., Verdun, Approx. $250,000. CD 12/20.

Que., Thurso—SCHOOL, etc., School Comn. A. Frappier, secy., 2 story, bsmnt., 56x139 ft., rein.-con., brick school and residence, to J. P. Desrochers Co., Ltd., 59 Strathearn Ave., Montreal West, Approx. $260,000. A. Potvin, 76 Blvd. St. Joseph St. W., Montreal, archt.

COMMERCIAL BUILDINGS

BIDS ASKED

N. Y., Albion—HOSPITAL—B.A. 1/17—Arnold Gregory Hospital, East Ave., hospital, $500,000. Duane Lyman & Assoc., 505 Delaware Ave., Buffalo, archts. CD 1/25/45.

N. D., Grafton—HOSPITAL—B.A. 1/20—Grafton Deaconess Hospital Addn., Grafton, hospital, $275,000. Lang & Raugland, Wesley Temple Bldg., Minneapolis, Minn., archts. CD 1/10/47.

Alta., Edmonton—HOTEL—B.A. 2/6—Geo. F. Drummond, 355 McGill St., Montreal, Que., foundations of Macdonald Hotel exten. Approx. $250,000. Plans deposit $100. H. L. Robbin, c/o owner, engr. CD 4/8.

Ill., Chicago—OFFICE—Bids Asked—Bernstein Bros., c/o David S. Klaffer, archt., 100 N. La Salle St., Zone 2, 2 story, 80 x 80 ft., rein.-con., brick, terra cotta office addn., 10 N. Clark St. $310,000.

SOON LETS CONTRACT

Ala., Mobile — HOSPITAL — Providence Hospital, c/o Charles H. McCauley, archt., Jackson Bldg., Birmingham, soon lets contract hospital. CD 12/9.

N. Y., New York—COLLEGE BLDGS.—Controllers Office, Columbia University, 525 W. 120 St., soon lets contract altering college bldgs. $250,000. Adams & Woodbridge, 204 E. 39 St., Zone 16, archts.

O., Cleveland Heights—CHAPEL, etc.—Church of the Saviour, 3537 Lee Rd., Cleveland, soon lets contract 2 story, bsmnt., brick, stone, steel chapel and educational bldg., East Wing addn., Lee Rd. and Bradford St. $300,000. Travis G. Walsh, 508 Cuyahoga Savings & Loan Bldg., Cleveland, archt. CD 7/13.

LOW BIDDERS

Ala., Mobile—SHOPPING CENTER—Owner, c/o Richard A. Vender Sys., archt., 61 N. Royal St., Mobile, rejected bids Dec. 20, shopping center. CD 12/14.

Ala., Montgomery—APARTMENT—John Mathews, c/o Horace Weaver, archt., Swann Bldg., Birmingham, Dec. 19, apartment, from A. Berney Jones, 409 Monroe St., $631,020. CD 12/9.

Fla., Miami—OFFICE—Five-Fifty Inc., c/o Robert Law Weed, Dupont Bldg., office, from J. Y. Gooch Co., Inc., Congress Bldg., $557,796. CD 12/14.

Md., Baltimore—DINING HALL—etc.—Levindale Hebrew Home & Infirmary, Belvedere and Greespring Aves., Dec. 20, 1 story, 76x106 ft., steel, concrete dining hall and kitchen, from Henry A. Knott, Inc., 2017 N. Charles St., Zone 18. $319,344. CD 12/2.

CONTRACTS AWARDED

Ala., Birmingham—HOMES—H. J. Tillia, c/o Earl O. Murray, archt., Clark Bldg., 50 homes in Woodland Estates Section, Owner builds, $400,000.

Calif., Los Angeles—OFFICE—Los Angeles Jewish Community Center, 590 N. Vermont Ave., 5 story, 100,000 sq. ft. office, to Contracting Engineers, 2310½ W. Vernon St., $925,000. Bids 10/25. CD 10/17.

Calif., Los Angeles—HOSPITAL—Midway Hospital Corp., 5935 San Vincente St., 2 story, bsmnt., Midway Hospital addn., to C. W. Driver, Inc., 3416½ W. First St., $300,000. CD 5/13.

▲ **Calif., Whittier**—DWELLINGS—Wm. C. Warmington Constr. Co., 8330 W. 3 St., Los Angeles, and R. & W. Constr Co., 2264 E. Las Tunas Dr., Temple City, 297 frame, stucco dwellings in Rosemead Manor, Rosemead and Dunlop Blvd. Owner builds. $2,700,000.

▲ **Calif., Whittier**—DWELLINGS—Wm. C. Warmington Bldg. Co., 8330 W. 3 St., Los Angeles, 189 frame, stucco dwellings, Washington and Rosemead Blvds. Owner builds. $1,400,000. CD 2/2.

Conn., New Haven—HOUSING—Cooper Apartments, Inc., 339 Kimberly Ave., 92 family, brick veneer, frame apartment, Diamond St., to Kay Constr. Co., 210 Ridgefield St., Hartford, Approx. $750,000. CD 12/8.

▲ **Conn., West Haven**—HOUSING—Avon Co., 339 Kimberly Ave., 100 frame, single family unit homes, Pauline Ave. Jones Hills and Woodmont Rds. Owner builds. Est. $1,000,000. CD 12/23.

Fla., Miami—RESIDENTIAL DEVELOPMENTS—Rozanne Homes, Inc., c/o contractor, several residential developments, to Bing Kossoff Constr. Co., 1210 Washington Ave., Miami Beach, Approx. $250,000.

Ill., Chicago—HOMES—Bohemian Home for Aged, 5061 N. Pulaski St., two 2 story, 80 x 130 ft., brick, concrete homes for aged, to A. Kopecky & Son, 6537 Cermak Rd., Berwyn, and A. J. Bobeck, 8928 Fairview Ave., Brookfield. Approx. $250,000. Novak & Velet, 6804 Windsor Ave., Berwyn, archts.

Ill., Chicago—SCHOOL—Catholic Bishop of Chicago, 719 N. Wabash St., Zone 11, 2 story, 63x185 ft. school, 10204 S. Washtenaw St., to Henry Bros. Co., 228 N. La Salle St., Zone 1, $275,000. Awarded to 12/8. Barry & Kay, 53 W. Jackson St., Zone 4, archt. CD 6/27.

Ill., Chicago—HOME—Church Home for Aged, Ingleside and 54 Pl., Zone 15, 4 story, 32,000 sq. ft., steel, brick, concrete home for aged addn., to R. A. Armstrong, 6951 N. Ionia St., Zone 30, $280,000. Awarded 12/16. Mundie, Jensen & McClurg, 39 S. LaSalle St., Zone 3, archts. CD 10/28.

Ill., Chicago—APARTMENT—Community Development Trust, 39 S. State St., Zone 3, 36 unit apartment, 2142 W. Rosemont St., separate contracts. $350,000. CD 5/26.

Ill., Chicago—APARTMENTS—Foster Hoyne Corp., 111 W. Monroe St., Zone 3, two 2 story, 98x102 ft. apartments, to C & R Co., 51 N. Lotus St., Zone 44, $250,000. H. A. Stahl, 111 W. Monroe St., Zone 3, archt. Awarded 12/13. CD 11/4.

Ill., Chicago—CONVENT—St. Thomas the Apostle, 5470 S. Kimbark St., Zone 15, 3 story, bsmnt., steel, concrete, brick, face brick convent addn. to L. J. Graf Constr. Co., 700 N. Michigan St., Zone 11, $250,000. Awarded 12/12. CD 9/20.

Ill., Elmhurst—HOMES—Superior Homebuilders, 30 N. Dearborn St., Zone 2, 35 homes, Crescent St., Owner builds. $250,000. F. J. LaPasso, 8 S. Dearborn St., Zone 3, archt.

Ill., Highland Park—HOSPITAL—Highland Park Hospital, 645 Homewood St., 2 story, bsmnt., 27,000 sq. ft., steel, brick, concrete hospital addn. to B. W. Constr. Co., 39 S. LaSalle St., Chicago, Zone 3, $300,000. Awarded 12/19. Schmidt, Garden & Erickson, 104 S. Michigan St., Chicago, Zone 3, archts.

La., Baton Rouge—CHURCH, etc.—St. Agnes Roman Catholic Church, 908 E Blvd., church, recory, garage, convent bldg., etc., East Blvd., to Caldwell & McCann, Triad Bldg., $487,560, Bids 12/21, awarded 12/23, CD 11/25.

Md., Baltimore—HOUSES—W. C. Constr. Co., 5453 Fairlawn Ave., forty-eight 2 story dwellings, twenty-four 18x27x30 ft. and twenty-four 14x27x31 ft. masonry, separate contracts. $250,000. Hall A. Miller Assoc., 2118 Maryland Ave., archts.

Md., Bethesda—HOTEL—Wm. H. Smith, c/o contractor, design and construction, 6 story, 600,000 cu. ft. concrete, frame hotel, Wisconsin Ave. and Middleton Lane, to B. W. Beman, Sr., 552 Washington Bldg., Wash., D. C., $900,000.

Mass., Hyannis—HOUSING—Louis A. Byrne, Main St., Dennisport, 50 Cape Cod style frame houses, Seaside Park, to John Doherty, Dennisport and Ellis G. Williams, 132 N. Main St., Middleboro, Approx. $350,000.

Miss., Yarmouth—HOUSING—Ralph M. Johnson, Jr., Centerville, fifty 1½ story, 25x30 ft. frame houses, Owner builds, $350,000.

Mo., St. Louis—BANK—First National Bank in St. Louis, 305 N. Broadway, Zone 1, 6 story, bsmnt. bank alterations, to Bank Bldg. & Equipment Corp. of America, 906 Sidney St., Zone 4, Approx. $300,000.

▲ **O., Bedford**—HOMES—Konomee Homes, 3071 W. 6 St., Cleveland, 100 one story bsmnt., frame homes, separate contracts. $1,000,000.

O., Bedford—HOMES—Squires Building Co., 2166 Fairhill Rd., Cleveland, 29 one story, bsmnt., frame homes, in Kenwood sub-division, separate contracts. $270,000.

O., Cleveland—HOMES—M. Helper & Son, 4118 Lee Rd., fifty 1½ story, bsmnt., frame homes, Shaker Lee Road Dist., separate contracts. $500,000.

▲ **O., Lynchurst**—HOMES—Hanson & Beatty Constr. Co., 4040 Mayfield Rd., South Euclid, 200 two story, bsmnt., frame homes, Dorset and Croyden Rds., separate contracts. $3,200,000.

O., Mentor—HOMES—Keyes & Truehoft, 10514 Shaker Blvd., Cleveland, 10 homes, separate contracts. $400,000.

O., South Euclid (Br. Cleveland)—HOMES—Di Carlo Builders, 5958 Mayfield Rd., Mayfield Heights, fifty 1½ story, bsmnt., brick homes in South Euclid, Mayfield Heights and Lyndhurst, separate contracts. $500,000.

R. I., Barrington—BUSINESS CENTER—Barrington Center, H. H. Tise, pres., Barrington, business center, brick, steel theater, automobile and service station, 28 stores, real estate and other offices, Bosworth Development, Owner builds. Approx. $250,000. Oliver O. Gauvin, 72 Weybosset St., Providence, archt. CD 4/16/48.

S. C., Greenwood—RESIDENTIAL DEVELOPMENT—Lyles & Long Constr. Co., c/o Lyles, Bissett, Carlisle & Wolfe, archts., 1302 Main St., Columbia, residential development, Owner builds. Approx. $500,000.

Tenn., Chattanooga—THEATER—Center Theater, c/o contractor, theater, to Verhey Constr. Co., 801 Bluff St., Approx. $300,000-$400,000. CD 12/9.

Concrete
VIBRATORS
Gasoline Engine or
CONCRETE GRINDERS

Other Products
Electric Motor Driven
FRONT END SHOVELS
for Industrial Tractors
HEATING KETTLES
for Asphalt and Tar
AGGREGATE DRYERS
for Stone and Sand
ASPHALT PLANTS
Portable—Stationary
Write for Circular

White Mfg. Co.
ELKHART INDIANA

THE **SAFE**
OPEN STEEL FLOORING
IS **TRI-LOK**

No object over ½ square inch can pass through super-safe U-Type Tri-Lok Flooring. Fabricated without bolts, rivets or welds, it is unsurpassed for plant installation, walkways, loading platforms. Efficient distribution of concentrated loads... maximum free opening for light and air. Write for Bulletin JX 1140.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company

Dravo Bldg., Pittsburgh 22, Pa.

Sales Representatives in Principal Cities

Tex., Fort Worth—COMMUNITY CENTER—Beverly Hills Development Co., 209 W. 8 St., Unit 5, community center, own forces. $250,000. CD 3/4.

Tex., McAllen—HOUSING—Suttle Constr. Co., McAllen, ranch type housing, concrete slab fdns., own forces. Approx. $375,000. CD 12/21.

Tex., Midland—APARTMENT—Commercial Constr. Co., Midland, 12 unit apartments, own forces. Approx. $280,000. CD 12/19.

Tex., Midland—HOUSING—James K. Royce, Midland, frame housing, own forces. Approx. $250,000. CD 12/19.

Tex., Odessa—APARTMENTS—Roger Ashford, 213 W. 3 St., apartments, own forces. Approx. $250,000. CD 12/19.

Tex., Sweetwater—DWELLINGS—Bailey Choate, Sweetwater, 65 dwellings, own forces. Approx. $455,000. CD 12/15.

Wash., Seattle—STORE—Marshall Field & Co., 25 E. Washington St., Chicago, Ill., steel structure for 5 story, Frederick & Nelson department store addn., to Pacific Car & Fdry. Co., 120 W. Hudson St., Approx. $300,000. J. Graham, Dexter Horton Bldg., Zone 4, engr. CD 6/16.

INDUSTRIAL BUILDINGS

BIDS ASKED

O., Cleveland—WAREHOUSE—Bids Asked—Associated Steel Co., 4545 Hough Ave., 1 story brick, block, steel warehouse, 1795 E. 45 St., $75,000.

SOON LETS CONTRACT

La., New Orleans—WAREHOUSE, etc.—Sharp & Dohme, Inc., c/o H. Van Rappard, archt., Goodchaux Bldg., soon lets contract 21,000 sq. ft. warehouse and office. Approx. $68,000.

N. D., Grand Forks—POWER PLANT EQUIP.—Minnkota Power Co-operative, Grand Forks, soon lets contract power plant equip. Ellerbe & Co., 1st Natl. Bank Bldg., St. Paul, Minn., engrs. CD 2/6/47.

Va., Norfolk—WAREHOUSE—Old Dominion Paper Co., c/o Benjamin F. Mitchell, archt., soon lets contract Flat Iron Bldg., warehouse alterations, addns.

B. C., Vancouver—PLANT—C. B. K. Van Norman, archt., 540 Seymor St., soon lets contract bsmnt., main floor, mezzanine 76 x 176 ft., rein.-con. L-shaped newspaper publishing plant for Sun Publishing Co., Ltd., 500 Beatty St., Approx. $200,000.

CONTRACTS AWARDED

Calif., Sacramento—WAREHOUSE—Arata Bros., 1812 19 St., warehouse, to Geo. J. Harlann, Box 755, Approx. $86,000.

Calif., San Francisco—INDUSTRIAL—Dalziel Plumbing Supplies, 1145 Bryant St., 2 story, mezzanine, concrete, rein.-con. industrial bldg., to Barrett & Hilp, 918 Harrison St., Approx. $68,000. Bids 11/16. CD 12/13.

Calif., San Francisco—CANNERY—Workman Packing Co., 432 7 St., Oakland, cannery, to W. K. Owen, 1397 55 St., Emeryville, $200,000. S. A. Soderstrand, 1734 Campbell St., Oakland, engr.

Calif., Vernon—PLANT—Swift & Co., 2691 E. Vernon Ave., reinforced brick meat packing plant addn., to Steel Bros., Box 350, Alhambra, $125,000. Bids 12/6.

Ill., Chicago—FOUNDRY, etc.—Elseco Smelting Corp., c/o contractor, 60x300 ft., steel, brick foundry, warehouse office, W. 34 St. and Lawndale Ave., to Zisken Constr. Co., Inc., 430 W. Roosevelt St., $125,000.

Ia., Onawa—FACTORY—Green Gables Builders, Inc., Onawa, factory. Owner builds. $80,000.

Ky., Owensboro — WAREHOUSE — Glenmore Distilleries, Owensboro, 20,000 bbl. capacity, 5 story, bsmnt., 71x217 ft. brick barrel storage warehouse, to R. R. Williams, 1728 Mosely Ave., $149,775. Awarded 12/3. D. B. McCarroll, Owensboro, engr.

Ky., Owensboro—WAREHOUSE and OFFICE—Sears Roebuck Co., W. Arthington and S. Homan Sts., Chicago, Ill., 1 story, 180x240 ft., brick, concrete block warehouse and office, to Sullivan & Cezzart, 832 W. Kentucky St., Louisville, Zone 3, $328,381. Bids 12/1. Max Bisson, Owensboro, archt.

Mass., Fitchburg—BAKERY—United Cooperative Society of America, 815 Main St., Dec. 10, 2 story, bsmnt., 60x62 ft. brick, concrete bakery addn., to H. Vincent Lindberg, 90 Electric Ave., $80,000. CD 12/1.

Mo., St. Louis—WAREHOUSE—H. A. Dailey, Inc., 876 Hodiamont Ave., Zone 12, 1 story, 53x121 ft., concrete block warehouse, concrete fdn., 901 Hodiamont Ave., to H. A. Dailey, Inc., 876 Hodiamont Ave., Zone 12.

Mo., St. Louis—GARAGE—Federal Reserve Bank of St. Louis, 411 Locust St., Zone 2, 1 story, 105x166 ft., bsmnt., concrete, roof garage 4 and St. Charles Sts., to Gamble Constr. Co., 804 Pine St., Zone 1, $270,000. Russel Crowell, Mullegarde & Schwartz, 1620 Chemical Bldg., Zone 1, archts., W. C. E. Becker, Ambassador Bldg., 411 N. 7 St., Zone 1, engr.

N. C., High Point—PLANT—High Point Weaving Co., 711 E. Russell St., weaving plant addn., to Herman Holt, Graham, Approx. $85,000.

O., Geneva—PLANT, etc.—Robert Rowley, 5319 Amelia Ave., Ashtabula, 1 story, bsmnt., brick, block, steel newspaper plant and office, 23 S. Forest Ave., to Matt Kujala, Harbar Post Office Bldg., Ashtabula, $150,000. Geneva Free Press, 34 S. Broadway, lessee.

Tenn., Nashville—PLANT—Jersey Farms Milk Co., c/o contractor, dairy plant addn., to Dan Yearwood, 205, 19 Ave. N., Approx. $68,000.

Va., Norfolk—SALES and SERVICE—Kline Chevrolet Sales Corp., c/o Alfred M. Lublin, archt., 700 Front St., auto sales and service bldg. addn., to J. T. Nichols, 4013 Gosnold Ave. Approx. $100,000.

Alta., Edmonton—STORAGE—Canadian National Rys., E. Wheelwright, ch. engr., 360 McGill St., Montreal, Que., 50x300 ft., rein.-con., brick, tile storage bldg., C.N.R. Calder St. Yards, to Dominion Constr. Co., Ltd., 10262 108 St. Approx. $200,000.

B. C., Vancouver—PLANT—Vancouver Ice & Cold Storage Ltd., 97 Gore Ave., 4 story, 85x140 ft., rein.-con. cold storage plant unit, to Commonwealth Constr. Co., Ltd., 679 Taylor St., $133,000. Bids 12/12, awarded 12/12. CD 11/30.

Ont., Toronto—PLANT—Nash Motors of Canada, Ltd., 2951 Danforth Ave., assembly plant exten., to Bradlor-Hoshal Ltd., 1107 Yonge St., Approx. $125,000.

UNCLASSIFIED

BIDS ASKED

Ohio—RURAL DISTRIBUTION LINES—B.A. 1/19—Buckeye Rural Electric Co-operative, Inc., Gallipolis, approx. 8.69 mi., 34.5 kv., rural distr. line, known as Scottown Transmission Line, Lawrence Co. Plans deposit $10. C. M. Ramsay, 143 Third Ave., Gallipolis, engr.

Iowa—POWER PLANT—B.A. 1/24—Southwestern Federated Power Co-operative, Creston, Sect. II, power plant pipe covering and equipment insulation Creston. Extended date. CD 12/8.

SOON LETS CONTRACT

Miss., Vicksburg—MOTOR COURT—Magnolia Hotel Co., c/o Raymond Birchett, archt., 2914 N. State St., Jackson, soon lets contract 36 unit motor court.

LOW BIDDERS

Calif., Oakland—PLAYGROUND—Bd. Directors, Recreation Dpt., 21 12 St., Dec. 21, de Fremery Playground, from O. C. Jones & Sons, 1520 4 St., Berkeley, $87,800. CD 12/9.

La., Zachary—GAS SYSTEM—Town, Town Hall, Dec. 12, municipal natural gas sys. and municipal gas sys. alterations, addns., from L. O. Raborn, 2627 Evangeline St., Baton Rouge, $56,930. CD 11/30.

N. C., Lenoir—ATHLETIC FIELD—Bd. Educ., Lenoir City Administrative Unit, E. C. McCall, chm., Dec. 20, athletic field, from Setzer Constr. Co., Hickory, $86,578. CD 12/6.

B. C., Zaballos—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Dec. 21, wharf replacement, from Findlay White Constr. Co., Vancouver. Approx. $71,999. CD 12/6.

CONTRACTS AWARDED

Ill., East Delavan (Delavan P. O.)—DRIVE-IN THEATRE—Jos. N. Sikes et al, P. O. Box 1093 Springfield, 750 to 1000 car capacity drive-in theatre, on Hy. 50 between Lake Geneva and Delavan, separate contracts. Approx. $200,000.

Ill., West Frankfort—DRIVE-IN THEATRE—Joe Sullivan & Robert Strauss, Benton, 500 car drive-in motion picture theatre, to be known as Midway Drive-In Theatre, Route 37 about 3 mi. north of here, separate contracts. Approx. $100,000. CD 2/23.

Ind., Portland—DRIVE-IN THEATRE—Mallers Bros., c/o George Maller, Princess Theatre, 600 car drive-in theatre, on 15 acre tract, Meridian St., separate contracts. Approx. $100,000.

Ind., Veray—DRIVE-IN THEATRE—Charles Scott, c/o Hoosier Theatre, Ferry St., 500-car drive-in motion picture theatre, to be known as Veray Drive-In Theatre, State Rd. 56 west of city limits, to Jack Bowling & Sons, Madison. Approx. $100,000.

Kan., Dodge City — DRIVE-IN THEATRE — Glenn A. Cooper, Dodge City, drive-in theatre, separate contracts. $100,000.

Ky., Carrollton—DRIVE-IN THEATRE—Riverview Farms Drive-In Theatre, R. L. Gaines, pres., Carrollton, drive-in theatre, to Jack Bowling & Sons, Madison, $100,000.

New York—SIGNAL AND TELEPHONE EQUIP.—Bd. Transportation, 250 Hudson St., New York, Zone 13, installing signal and telephone equip. for Hillside Ave. extens., west of Parsons Blvd. Station to 184 Pl. Line D, Queens Co., to Watson-Flagg Eng. Co., 140 Cedar St., New York, Zone 6, $753,947. Bids 11/18. CD 12/o, under LB.

O., Cleveland—SLIP REPAIRS—Standard Oil Co., Refinery No. 1, Broadway Ave., slip repairs, to Great Lakes Dredge & Dock Co., Williamson Bldg. Approx. $65,000.

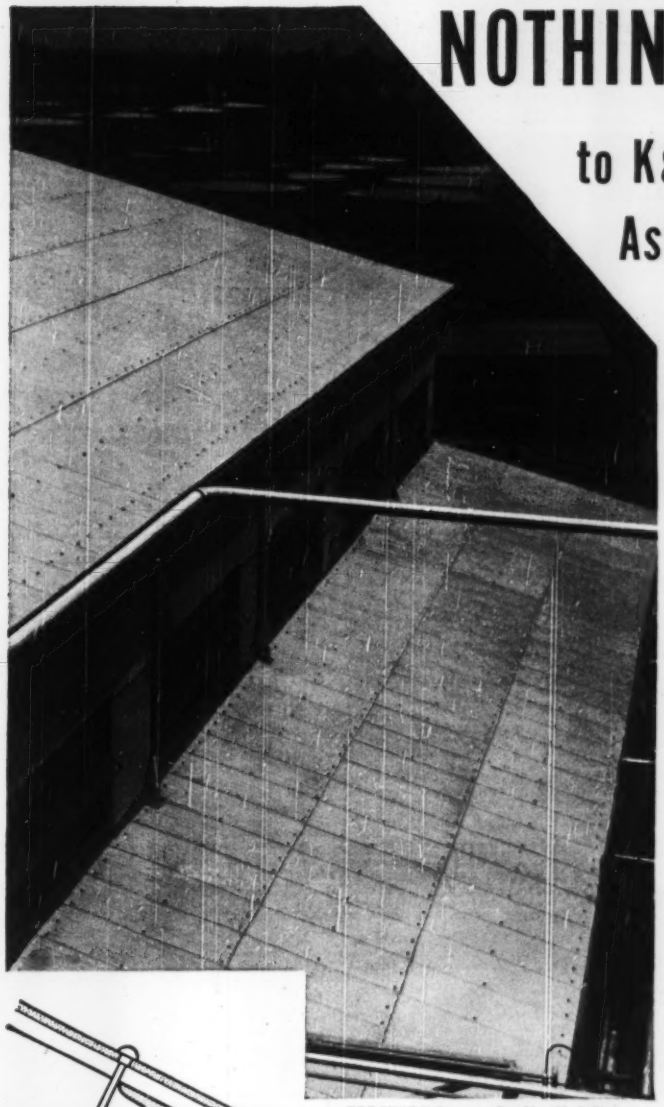
Tex., Houston—DRIVE-IN THEATRE—Claude Ezell & Assoc., 2031 Jackson St., 800 car capacity drive-in theatre on Old Spanish Trail area, to Tom Farmer & Son Constr. Co., 2009½ Jackson St. Approx. $250,000. CD 12/20.

Que., Levis—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf reconstruction, to MacNamara Constr. Co., Ltd., 42 Industrial St., Leaside. Approx. $757,995. Bids 11/23. CD 11/29, under LB.

Que., Rimouski—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf reconstr., to Compagnie des Boulevards de St. Basil, St. Basil, $540,117. Bids 11/23. CD 11/30, under LB.

NOTHING HAPPENS

to K&M *"Century"* Asbestos Corrugated



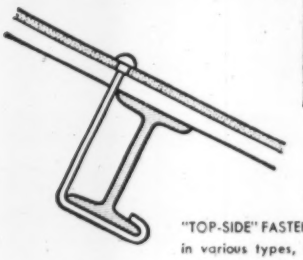
Here you see it used for both the roofing and siding on this Shell Oil Company building at Deer Park, Texas. Don't ever expect to see it hurt by the weather or other adverse atmospheric conditions. Count on it to go rustless and rotless. It won't suffer from rodents and termites, and is exceptionally resistant to fire.

Easily cut and fitted on the job, K&M "Century" Asbestos Corrugated produces tight, good-looking surfaces at minimum labor cost. For extra savings use "TOP-SIDE"* fasteners, as on this Shell building. They entirely eliminate scaffolding and are only available with K&M "Century" Asbestos Corrugated.

Your finished job will benefit by the inherent structural strength of this material which actually gains strength with age. As for upkeep, you needn't figure on even one bit of paint!

*℠ H. & B. Enterprise Corp.

ERECTORS: Lummus Co., New York City.



"TOP-SIDE" FASTENERS are made in various types, to fit all steel members on both roofing and siding. Illustration of typical "J" type for roofing.

Nature made Asbestos...
Keasbey & Mattison has made it serve mankind since 1873

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

CONSTRUCTION REPORTS—Second Section

WATER SUPPLY

BIDS ASKED

Ont., Trafalgar—B.A. 1/17—Trafalgar Twp., S. A. Featherstone clk., Trafalgar, watermains, hydrants, gate valves, $35,000. G. H. Power, Oakville, engr.

▲ **O., Bowling Green**—B.A. 1/31—City, Clarence W. Dick, mayor, Bowling Green, WW imprvs., Sect. A, low service pumping station, 22x36x40 ft. high, rein.-con., Route 65 and King Rd.; Sect. B, 56x115x137 ft. high, rein.-con. substructure, brick superstructure, water treatment plant, lime, soda, ash type with 3 m.g.d. capacity, Route 65 and King Rd.; Sect. C, approx. 53,300 lin. ft., 16, 18 or 20 in. c. i., steel and lock joint pipe transmission main; Sect. D, approx. 12,400 ft. 12 in. and either 16, 18 or 20 in. c. i. steel, lock joint and asbestos cement pipe distr. main (c. i. and asbestos cement pipe 12 in. or smaller). $1,500,000. Plans deposit $30. Finkbeiner, Pettis & Strout, 518 Jefferson St., Toledo, engrs.; adv. ENR 1/12. CD 8/4/48.

Tex., Dallas—Bids Asked—Verron and James Smith, 2154 Fort Worth Ave., c.i. waterlines, $40,000.

Tex., Houston—Bids Asked—Southland Investment Co., 7106 Long Dr., waterlines, facilities, $40,000.

LOW BIDDERS

† **N. M., Albuquerque**—U. S. Eng., Box 1538, Dec. 28, water supply sys. (Central Constr.), Sandia Base, Serial No. Eng-29-005-50-24, from Warner Bros. Constr. Co., 2826 Eaton St., Denver, Colo. $110,724. Est. $125,000. CD 12/6

Tex., Beaumont—The Ayrshire Corp., 6825 Academy St., Houston, c.i. waterlines, from Mischer-Harris Constr. Co., 5141 Leeland St., Houston. Approx. $30,000. CD 12/29.

Tex., Galveston—City, Dec. 29, rein.-con. fdns. for 3 water reservoirs, incl. grading, all dirt work, connecting piping, from Tellepsen Constr. Co., 1710 Telephone Rd., Houston. $61,515. Est. $30,000. CD 12/16.

Wis., Monroe—Bd. Water Comrs., Dec. 27, pumphouse and reservoir, from D. Oudenhoven, Kaukauna. $31,420. CD 11/29.

CONTRACTS AWARDED

Del., Wilmington—City, Sixteenth St. and Cove-Spring Park Pumping Stations imprvs., addns., to Henry E. Baton Inc., 1717 Sansom St., Phila., Pa. $394,050. Bids 12/14. CD 12/8.

Kan., Fort Scott—City, City Hall, pumps and intake structure, to Carrothers Constr. Co., Paola. $77,450. Bids 12/17. CD 12/14.

▲ **Mich., Detroit**—City Bd. Water Comrs., Water Bd. Bldg, 735 Randolph St, Zone 26, Northeast Tunnel, to Gargaro Co., 40 E. Seven Mile Rd. $5,587,937. Bids 12/22. CD 12/30, under LB.

N. M., Taos—City, WW, to Arizona Concrete Pipe Co., 1746 W. Fillmore St., Phoenix, Ariz. $89,216. R. E. DeBolt & Co., Santa Fe, engrs.

▲ **N. Y., East Meadow**—East Meadow Water Dist., c/o Town Clerk, Town Hall, Hempstead, water distr. sys., pump stations, etc., Contr. 3, wells, pumps and equip., to Layne-New York Co., Inc., 92 Liberty St., New York, Zone 6, $93,700***Contr. 4, electrical equip., to Davidson Electric Co., 1265 Atlantic Ave., Brooklyn, $41,294***Contr. 5, buildings, to Holger Olson, Penroy St., $53,153***Contr. 6, elevated storage tank, to Pittsburgh-Des Moines Steel Co., 270 Broadway, New York, $218,900***Contr. 7, distr. sys., to Karlson & Reed, Inc., W. Barclay St., Hicksville, $918,580***Contr. 8, grading, landscaping and roads, to Lizza & Sons, Inc., Orchard St., Oyster Bay, $48,266. Grand total $1,373,893. Bids 11/22. CD 10/27.

Okla., Tulsa—North Lewis Water Dist., Tulsa, water distribution district, to Osage Constr. Co., 1413 S. Blackwelder St., Oklahoma City, Zone 8, $63,050. Est. $70,257. Awarded 12/19. Wood & Craig, Philtower Bldg., engrs.

▲ **Pa., Chester**—Chester Municipal Auth., S and Welsh Sts., water transmission main from Octoraro Lake to Harrison Hill Reservoir in Lancaster, Chester and Delaware Counties, furnishing, installing transmission line in 4 sections, supplying pipe, large line, to Lock Joint Pipe Co., Box 269, East Orange, N. J., $3,599,617***installing pipe, large line, to Berlanti Constr. Co., Inc., 15 Oakland Ave., Harrison, N. Y., $2,053,471. Bids 12/15. CD 12/28, under LB.

S. D., Isabel—City, water supply and distr., to Barbarossa & Son, 402 33 Ave. N., St. Cloud, Minn., $88,773. Julian Staven, Rapid City, engr. Bids 12/19.

Tex., Dallas—City, City Hall, Main and Harwood Sts., 30 in. watermain, Jefferson, Van Buren Sts., etc., to E. H. Reeder Constr. Co., 2128 Hawes St., Alt. 2, $179,393, pipe furnished by owners, $120,000, total $299,293. Bids 12/20. CD 12/29, under LB.

Tex., Fort Worth—Richland Development Co., c/o Ed Baker, Grapevine Rd., WW. Owner builds. Approx. $70,000.

Tex., Gladewater—City, WW, force account, $40,000.

Tex., Houston—City, City Hall, 900 Brazos St., pumping plant, concrete fdn. for 600,000 gal. steel tank at Municipal Airport, to Fisher Constr. Co., 4711 Greeley Ave., $115,759. Bids 12/21. CD 12/29, under LB.

Tex., Houston—City, City Hall, 900 Brazos St., 8 to 20-in. c.i. waterlines, Cobb, Long and Buffalo Dr., force account, $38,000. Est. $45,000. L. Fugate, c/o owner, city engr.

Tex., Houston—Greenfield Utilities Corp., c/o Greenfield Sub-Division, water distr. sys., own forces, $29,900. Douglas & Mansfield, National Standard Bldg., engrs.

Tex., Pasadena—John A. Campbell, c/o Campbell Realty Co., Pasadena, c.i. waterlines, Sect. 2, own forces. Approx. $45,000. A. C. Stimson, 1305 Rosalie St., Houston, engr.

Tex., Pasadena—John A. Campbell, c/o Campbell Realty Co., Pasadena, Sect. 1, c.i. waterlines, facilities, own forces. Approx. $60,000. A. C. Stimson, 1313 Rosalie St., Houston, engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Md., Hyattsville—B.A. 1/16—Washington Suburban Sanitary Dist., Hamilton St., Contr. 245-S, Paint Branch Trunk Sewer from Northeast Branch to Baltimore-Washington Blvd., Berwyn Dist., approx. 590 ft. 10 in. CSPX, 5,880 ft. 30 in. CCP, 190 ft. 30 in. RCCPX sewers. Plans deposit $5; adv. ENR 1/12. CD 10/10.

Okla., Spiro—B.A. 1/24—City, sanitary main sewer lines, lateral sewerlines and sewage disposal plant. $65,000. Plans deposit $25. H. T. Lawrence, 1801 N. W. 21 St., Zone 6, engr. CD 9/8.

Tex., Dallas—Bids Asked—Vernon and James Smith, 2154 Fort Worth Ave., 24 in. concrete sanitary sewers. $65,000.

Tex., Houston—Bids Asked—Southland Investment Co., 7106 Long Dr., sanitary sewers, drainage. $60,000.

LOW BIDDERS

▲ **Ariz., Tucson**—City, sewage disposal plant, from M. M. Sundt Constr. Co., 440 S. Park Ave., Tucson, $1,136,288. Headman, Ferguson, Carollo, 3308 N. 3 St., Phoenix, engrs. CD 2/1/46.

Calif., Oakland—East Bay Municipal Utility Dist., 512 16 St., Dec. 29, Sects. 5 and 6 of South Interceptor Sewer, approx. 22,500 ft. long, Prop. S.D. 42, from Artukovich Bros. and Steve P. Rados, Paramount, Schedule L, $605,522***from P & J Artukovich, Inc., 13305 S. San Pedro St., Los Angeles, Schedule M, $745,479; Schedule N, $1,102,239; Schedule O, $1,055,158; Schedule P, $514,156***from Stolte, Inc., 8451 San Leandro St., Oakland, Fred J. Early Jr., 360 Pine St., San Francisco and Duncanson-Harrieson Co., de Young Bldg., San Francisco, Schedule A, $837,365; Schedule B, $843,140; Schedule C, $1,239,033; Schedule D, $987,393***from Healy-Tibbitts, 411 Brannon St., San Francisco, Schedule E, $579,489. CD 12/6.

Calif., Whittier—The Phoenix Constr. Co., 642 S. Western Ave., Los Angeles, Dec. 20, 6- to 10-in. vitr clay sanitary sewers in Tract 15885, 233 house connections, from M. Miller, 877 N. Bunker Hill, Los Angeles. Approx. $65,000; street imprvs., 15,000 lin ft., curbs, gutters, paving Tract No. 15885, from Harvey Constr. Co., 1147 E. Garvey Ave., El Monte, $65,000. CD 12/6.

Md., Hyattsville—Washington Suburban Sanitary Comn., Hamilton St., Dec. 27, Contr. 215-S, Cabin John Branch Trunk Sewer from C. & O. Canal to River Rd., Glen Echo Dist., from W. F. Wilson & Sons, Brookville, $218,873. CD 12/15.

Md., Towson—Comrs. Baltimore Co., Towson, Dec. 29, Contr. 147-D, drains, storm sewers, incl. approx. 140 cu. yd. Class A and 30 cu. yd. Class B concrete, 4,050 lin. ft. 18- to 60- R.C.P.; 2,820 lin. ft. 24- to 42-in. R.C.C.P.X., 1,130 lin.ft. 8- to 24-in. V.C.P.X.; 250 lin. ft. 6 in vitr clay pipe, inlets, manholes, etc., from Ligon & Ligon, Inc., 3310 Ridgewood Ave., Baltimore $91,860. CD 12/28.

Tex., Beaumont—The Ayrshire Corp., 6825 Academy St., Houston, sanitary sewers, from Mischer-Harris Constr. Co., 5141 Leeland St., Houston. Approx. $53,000. CD 12/29.

Tex., Dallas—City, City Hall, Main and Harwood Sts., Dec. 20, sanitary sewers in Deerpath Village, from E. E. Farrow, 1518 Kings Hy., $53,335. CD 12/1/48.

Tex., Galveston—City, Dec. 29, sanitary sewer lines, Contr. 1, from Mainland Development & Equipment Co., Avenue J, $70,860. Est. $65,000. CD 12/6.

Tex., San Antonio—City, City Hall, Military Plaza, Dec. 29, sanitary sewers, various streets from Wahrmund-Logan Co., 422 Hays St., $34,000, materials by city, $20,000, total $54,000; Sect. 5 of East Side sanitary sewer main and laterals proj., from George Consolidated, 7225 Culmore St., Houston, $162,130, est. $130,000. CD 12/14.

▲ **Tex., San Antonio**—City, Jimmie Knight, street comr., City Hall, Military Plaza, rejected bids Dec. 17, Contr. 2, sanitary sewer plant unit and remodeling, L. B. $289,081; Sect. 3, sewage disposal plant enlargement, L. B. $1,225,570. CD 12/20, under LB.

CONTRACTS AWARDED

▲ **Ariz., Tucson**—City, 12 m. g. actuated sludge sewage disposal plant to M. M. Sundt Constr. Co., 440 S. Park Ave., $1,104,290. Awarded 1/3. CD 1/4, under LB.

Ill., East Peoria—East Peoria Drainage Dist., East Peoria pumping works, to Fred Harbers Sons Co., 101 S. Adams St., Peoria, $110,000. Awarded 12/14. CD 3/4.

N. M., Taos—City, sanitary sewer extens. to Arizona Concrete Pipe Co., 1746 W. Fillmore St., Phoenix, Ariz. $134,630. Bids 12/21. R. E. De Bolt & Co., Santa Fe, engrs. CD 11/10/48.

▲ **N. J., Gloucester**—Gloucester City Sewage Auth., City Hall, sewage treatment and refuse incinerator plant, Contrs. 1 to 8 (inclusive), to C & T Constr. Co., 810 Haddon Ave., Collingswood, $1,253,646. Bids CD 11/17, under LB.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, reconstructing Mill Creek Sewer, to Yetman Contractors, Inc., 1922 Brancywine St. $164,416. Est. $175,000. A. Zane Hoffman, c/o owner, ch. engr. CD 12/1/43.

Tex., Houston—Greenfield Utilities Corp., c/o Greenfield Sub-Division, sewage disposal plant, collection lines, own forces. Approx. $50,000. Douglas & Mansfield, National Standard Bldg., engrs.

Tex., Pasadena—John A. Campbell, c/o Campbell Realty Co., Pasadena, Sect. 1, sanitary sewers, drainage, own forces. $66,000. A. S. Stimson, 1303 Rosalie St., Houston, engr.

Tex., Pasadena—John A. Campbell, c/o Campbell Realty Co., Pasadena, sanitary sewers, Sect. 2, own forces. $55,000. A. C. Stimson, 1305 Rosalie St., Houston, engr.

Tex., Taylor—City, water treatment plant addns., alterations, force account. $48,000. The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, engrs. CD 8/12/48.

Wash., Spokane—City, City Hall, Div. F, intercepting sewer project 1 mi. 6 ft. diam. tunnel, to Valley Constr. Co., 7708 Rainier Ave., Seattle. $589,395. Bids 12/22, awarded 12/28. CD 12/29, under LB.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

January 17
Iowa
Virginia

Kansas
Wisconsin

January 20
Illinois

January 25
New York

Pa., Phila.—B.A. 1/20—Dpt. P. Wks., City Hall Annex, Tabor Ave. Bridge and imprv. Tabor Ave. $500,000. A. Zane Hoffman, c/o owner, ch. engr. CD 2/3/47.

LOW BIDDERS

Louisiana—State Dpt. Hy., Baton Rouge, Dec. 28, cable ferry over Grand River at Pigeon, State Rte. C-2186, grading, timber bridges, shell surf., course (approaches) 0.083 mi. 5x32x60 ft. welded steel ferry barge with steel deck house and accessories and 2 gasoline engine power units with offset drum for operation of cable ferry, etc., S. P. 824-16-01 and 735-00-12, Iberville Parish, from Herbert Bros., Plaquemine, $60,065. CD 12/15.

La., New Orleans—City Purch. Div., 302 City Hall, Dec. 27, Proposal 12,429, 1751 ft. concrete, steel N. Claiborne Ave. Overpass on N. Claiborne over Press St. railyards, from Boh Bros. Constr. Co., 2400 Cypress St., $632,334. CD 12/5.

Maryland—State Rds. Comn., Baltimore, Dec. 22, repairing 745 ft. bridge over Sassafras River, U. S. Rte. 213 at Georgetown, Proj. CE 322-2-215, Cecil and Kent Counties, from John D. Sheetz Constr. Co., 1334 Sulphur Spring Rd., Halethorpe, $88,500. CD 12/7.

Maryland—State Rds. Comn., Baltimore, Dec. 28, triple span, 38-55-38 ft. steel I-beam bridge to carry Washington National Pike over B. & O. R.R., two tracks, dual superstructures, each 30 ft. wide, supported on rein.-con. spill thru type abutments and open bents, Contr. 425-6-615, Frederick Co., from The Fenwire Constr. Co., 31 S. Calvert St., Baltimore, $150,670. CD 12/14.

Nebraska—State Dpt. Roads & Irrigation, Lincoln, Dec. 8, culverts, FA-F-11, Elwood-Smithfield, from Stewart Bros., 895 N. 16 St., Lincoln, $52,349***culverts FA-F-124, Tecumseh-Pawnee City, from Nichols Constr. Co., Geneva, $112,058***viaduct, State R. 796-C, Alma-Franklin, from Rentfor Co., Grand Island, $50,335. CD 11/30, under Streets and Roads.

New Jersey—State Hy. Dpt., Trenton, Dec. 29, removal existing Passaic River bridge and incidental dredging, Passaic and Bergen Counties, from Fehlhaber Pile Co., Inc., 205 E. 42 St., New York, N. Y., $93,903.

CONTRACTS AWARDED

Kansas—State Hy. Dpt., Wichita, continuous steel beam span bridge Station 390 plus 75, 40 ft.—six at 50 ft. - 40 ft., S. P. 78 S 672 (2), Reno Co., to Banta Constr. Co., Harper, $55,126; wid'n 25 ft. - 45 ft. -25 ft. continuous rein.-con. girder span Bridge 54-87-28.7, Station 188 plus 55.5, S. P. 54-87 U 596 (4) and continuous steel beam span bridge Station 15 plus 99.5, 47 ft. - seven at 75 ft.-47 ft. S. P. 87 S 876 (1), both Sedgwick Co., to Inland Constr. Co., 3867 Leavenworth St., Omaha, Neb., $49,822 and 98,934, respectively, Grand total $193,822. CD 12/2.

La., New Orleans—New Orleans R.R. Terminal Bd., c/o contractor, N. Claiborne Ave. Overpass, to Boh Bros. Constr. Co., 2400 Cypress St., $632,334. Bids 12/27, awarded 12/30. CD 1/4.

Maryland—State Rds. Comn., Baltimore, nine 52 ft. steel I-beam approach spans and bases of 2 bascule piers for bridge on Queenstown-Stevensville Hy., over Kent Island Narrows, superstructure supported on precast concrete pile bents and spill-thru type abutments, two 27 ft. roadways, 4 ft. white concrete median, abutments supported on cast in place concrete piles, embankment sections at each abutment, treated timber pile dolphins, Contr. Q-1a8-4-215, Queen Annes Co., to McLean Contr. Co., 1301 Fidelity Bldg., Baltimore, $760,211. Bids 12/6, awarded 12/30. CD 12/13, under LB.

Maryland—State Rds. Comn., Baltimore, 5 span steel plate girder and steel I-beam bridge on rein.-con. substructure over Monacacy River on Washington National Pike, river crossing, triple span 115 ft., 140 ft., 115 ft. continuous deck plate girders, flanked on each end by 65 ft. I-beam spans, total 503 ft. dual superstructures, each 30 ft. clear roadway, Contr. F-425-5-615, Frederick Co., to Conduit & Foundation Corp., 770 Schuylkill Ave., Phila., Pa., Zone 46, $762,182. Bids 11/22. CD 11/21, under LB.

▲ **Pennsylvania**—State Hy. Dpt., Harrisburg, construct divided hy. consisting rein.-con. pavement 24 ft. wide, east side of 4 ft. concrete divisor area, incl. two I-beam bridges, one plate girder bridge, one rein.-con. rigid frame bridge and rein.-con. jacket for existing concrete arch culvert, construct 2 I-beam bridges, rein.-con. paving 26 ft. wide and reconstruct base with bit. surf. 13,172 ft. L.R. 763 (5D), 120 (21), T. R. U. S. 22, U. S. 30, between city of Pittsburgh and Forest Hillsboro, Penn-Lincoln Parkway, Allegheny Co., to Adam Eidemiller, Inc., Greensburg, $3,521,496. Bids 12/21. CD 12/27, under LB.

Pa., Phila.—Dpt. P. Wks., City Hall Annnex, wid'n. bridge and approaches over Bustleton Ave., to Herbert J. Elkins, 7348 Malvern Ave., $69,878. Est. $90,000. A. Zane Hoffman, c/o owner, ch. engr. CD 2/3/47.

Tennessee—State Hy. Dpt., Nashville, bridge over Hatchie River and excav. channel on State Hys. 14 and 54 at Tipton-Haywood County line, approx. 13 mi. west of Brownsville, 0.545 mi. Proj. No. F-046-1 (1), Tipton and Haywood Counties, to Dunn Constr. Co., First Natl. Bldg., Birmingham, Ala., $647,308. Bids 12/16. CD 12/22, under LB.

▲ **Washington**—State Hy. Dpt., Olympia, first unit rein.-con. Alaskan Way Viaduct, King Co., to Mac Rae Bros., 2733 4 Ave. S., Seattle, $1,193,912. Bids 12/20. CD 12/28, under LB.

Wyoming—State Hy. Comn., J. R. Bromley, supt., Cheyenne, seven I-beam span 403 ft. bridge over North Platte River on Orin Junction-Glendo Rd., Converse Co., to Etlin E. Peterson, 603 E. 15 St., Casper, $124,573. Bids 12/21.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

January 17
Iowa
Virginia

January 20
Illinois
Kansas
Pennsylvania
Wisconsin

January 25
Kansas
Louisiana
New York

January 27
Pennsylvania

January 31
Massachusetts

La., Lake Charles—B.A. 1/18—City, City Hall, 14,180 sq. yd. paving 41,440 sq. ft. drains under various sidewalks, W. D. Jesson, city engr.

Tex., Houston—B.A. 2/7—Harris Co., Precinct 4, E. A. Lyons, comr., Courthouse, 6½ mi. part of Britmore Rd. constr. $245,000; 9 mi. Memorial Dr. road exten., $400,000. Hugo Zapp, c/o owner, co. engr. CD 8/28/47.

Tex., Houston—Bids Asked—Southland Investment Co., 7106 Long Dr., street constr., paving, $70,000.

LOW BIDDERS

Arizona—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix, imprv. and new alignment 3.04 mi. Salt River Valley-Payson beeline hy., Gila Co., from Vinnel Co., Inc., Alhambra, Calif., $150,899.

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, Dec. 27, imprv. City Terrace Dr., Rowan to Wabash Aves., C. C. 0-657, from T. E. Sherlock, 1103 W. 40 Pl., $93,314. CD 12/6.

Colorado—State Hy. Dpt., Denver, Dec. 28, stabilization oil processing and structures, 3.232 mi. State Hys. 10 and 19 inside city of Durango, Colo. Proj. F-919-2 (2), La Plata Co., from Colorado Constructors, Inc., 725 W. 39 Ave., Denver, $98,864. Est. $103,824. CD 12/16.

▲ **Maryland**—State Rds. Comn., Baltimore, Dec. 22, grading, drainage, surf. 0.91 mi. several relocations State Rte. 176, beginning at west end Harmans grade elimination and exten. westerly toward Dorsey Grade Elimination, Anne Arundel Co., from F. P. Asher, Jr. & Sons, Inc., West Extension, Annapolis, $175,497. CD 12/9.

Maryland—State Rds. Comn., Baltimore, Dec. 27, grading, drainage, and wid'n several sections roadway and grading, drainage surf. several relocations State Rte. 31, total 3.308 mi., F-498-615, Frederick Co., from Carozza-Hamill & Co., 10 W. 25 St., Baltimore, $458,757. CD 12/21.

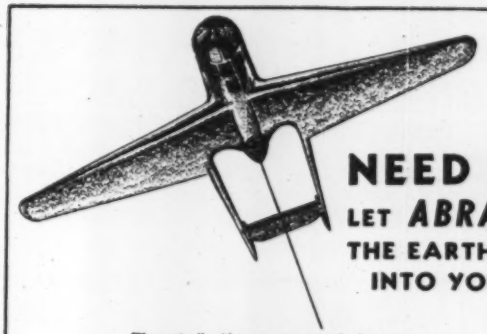
Maryland—State Rds. Comn., Baltimore, Dec. 28, grading, drainage, wid'n, resurf. 5.375 mi. section U. S. Rte. 1, beginning at Broadway and Hickory Ave., Bel Air and exten. northeasterly toward Conowingo, Proj. H-323-415, Harford Co., from T. B. Gatch & Sons, Inc., 3928 Bel Air Rd., $274,017. (Correction—contractor). CD 1/4, under LB.

Md., Salisbury—State Dpt. Health, 24 and Charles St., Baltimore, Zone 18, road and roadway lighting, Deer's Head State Hospital, from Pleasanton & Edgell, Inc., Mary St., Dover, Del., $65,949, John B. Funk, 506 Park Ave., Baltimore, ch. engr.

Nebraska—State Dpt. Roads & Irrigation, Lincoln, Dec. 8, grading, FA-S-297, Arthur-Tryon from R. V. Kirk, Gibbon, $89,195; grading, graveling, FA-F-124, Chadron-Hay Springs from Roberts Constr. Co., 1018 Trust Bldg., Lincoln, $105,575. CD 11/30.

New Jersey—State Hy. Dpt., Trenton, Dec. 29, interchange at South St. ramp on Rt. 25, Sect. 34J, Fed. Proj. UI-185 (12), Essex Co., from Franklin Contg. Co., 12 Central Ave., Newark, $91,365; 9.015 mi. Rt. 4 Parkway, Sects. 1, 2, 4, 5 and 6 guard rail, Fed. Proj. U-188 (18) Woodbridge, Clark and Cranford Twps., Middlesex and Union Counties, from Whitmyer Bros., Hammonton, $68,160. CD 12/8.

Tex., Beaumont—The Ayshire Corp., 6825 Academy St., Houston, site grading, street constr., paving from Mischer-Harris Constr. Co., 5141 Leeland St., Houston, $57,771. CD 12/29.



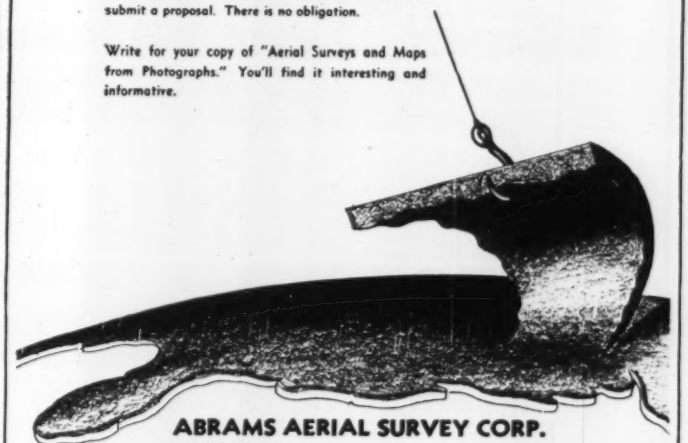
NEED MAPS?
LET *ABRAMS* BRING THE EARTH'S SURFACE INTO YOUR OFFICE

. . . Theoretically Abrams experienced photogrammetric engineers can do just that. Aerial surveys, and specialized maps of any type from aerial photographs are highly accurate, surprisingly economical.

Abrams engineers will work with you to develop a plan tailored to your individual needs. They'll show you how substantial savings can be effected . . . how aerial surveys will solve your mapping problems for less money . . . in less time.

If you will supply the requirements of any mapping problem you have under consideration, Abrams will submit a proposal. There is no obligation.

Write for your copy of "Aerial Surveys and Maps from Photographs." You'll find it interesting and informative.



ABRAMS AERIAL SURVEY CORP.
LANSING U. S. A. MICHIGAN

DRILLING CONTRACTORS
DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS
Foundation Testing for Bridges, Dams and All Heavy Structures
Also
Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment
SPRAGUE & HENWOOD, Inc.
Scranton, Pa. Dept. E, U. S. A.

***Changed your* ADDRESS?**
Let us know so that we can keep copies of Engineering News-Record coming promptly.

TO: Circulation Dept.
Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

Name .....
Old Address .....
New Address .....
Company .....

You Can't Beat Welded Construction
WELLMAN
Williams Type BUCKETS
● Wellman pioneered welded rolled steel construction for longer life and greater service. It's the extra strength that gives the extra, low-cost digging power. Whatever your requirements . . . whether for Multiple Rope, Power Arm, Dragline, Power Wheel or Special Service—specify Wellman! ⅜ to 16½ yd. capacity.
SEND FOR BULLETIN
THE WELLMAN ENGINEERING COMPANY
7000 CENTRAL AVENUE • CLEVELAND 4, OHIO

SAFE, FAST JACKING FOR ALL CONSTRUCTION JOBS

Simplex
LEVER · SCREW · HYDRAULIC
Jacks
TEMPLETON, KENLY & CO.
1002 S. Central Ave., Chicago 44, Ill.

LEFAX POCKET SIZE TECHNICAL DATA BOOKS $1. EACH

● Printed on loose leaf, six hole, 6¾" x 3¾" bond paper, each book contains about 140 pages of technical data, presenting condensed, accurate and essential data for the student, engineer, technical worker and business man.

Architecture	Gen'l. Chemistry	Surveying
Home Heating	Reinf. Concrete	Mech. Drawing
Illumination	Building Constr.	Machine Design
Electrician's Data	Radio	Machinists Data
Builder's Data	Television & FM	Piping Data
Lumber Data	Electricity, AC	Surveying Tables
Air Conditioning	Electricity, DC	Trig-Log Tables
General Math.	AC Motors and Generators	Metallurgy
Math. Tables	Transformers,	Analytic Chemistry
Physics	Relays, Meters	Highway
Chemical Tables	Hydraulics	Engineering
Metals		

● Write for FREE Catalogs (over 2000 listings). See for yourself how helpful LEFAX can be to you. Send $1. for each book, or $5. for any six books listed above, to:

LEFAX
Dept. ER 1 Philadelphia 7, Pa.

(Continued from page 70)

CONTRACTS AWARDED

Arizona—State Hy. Dpt., 17 Ave. and Washington St., Phoenix, bit. 7½ mi. St. Johns-Sanders Hy., Apache Co., to Wallace, S. 18 Ave., Phoenix, $106,341. Bids 12/23, awarded 12/30.

▲ **Fla., Daytona Beach**—City, paving various streets, to Brinson, Cone & Manley, 51 St. and E. Broadway Ave., Tampa. $2,340,000. Awarded 12/29. Gannett, Fleming, Corddry & Carpenter, Inc., 600 N 2 St., Harrisburg, Pa., consult. engr.

Ia., Vinton—Bd. Supervs. Benton Co., Vinton, surf. project to B. L. Anderson, Cedar Rapids. $182,880. Bids 12/28. CD 12/28.

Kansas—State Hy. Dpt., Wichita, c. conc. paving 0.194 mi. S. P. 54-87 U 396 (4), Sedgewick Co., to Stannard Constr. Co., 428 N. Rock Island St., Wichita, Kan., $64,804; c. conc. paving and asph. surf. course 0.587 mi. S. P. 50N-5 U 331 (17), Barton Co., to Broce & Smith, Contractors, Inc., Larned, $158,410. CD 12/2.

Maryland—State Rds. Comn., Baltimore, grading, drainage, c. conc. surf. along previously graded and drained section of Baltimore-Harrisburg Expressway, beginning at Point approx. 0.34 mi north of Timonium Rd., and approx. 0.43 mi. west of U. S. Rte. 111 and exten. northerly to point 700 ft. south of Shawan Rd. for 4.069 mi., Contr. B-578-9-415, Baltimore Co., to Bero Eng. & Constr. Co., Box 477, Hampton, Va., $616,780. Bids 12/28, awarded 12/29. CD 12/19.

▲ **Maryland**—State Rds. Comn., Baltimore, grading, drainage, surf. 2.706 mi. divided hy., on relocated section U.S. Rte. 50, beginning at east approach to bridge over Kent Narrows and exten. easterly to east limits of Grasonville, Contr. Q-168-7-215, Queen Annes Co., to C. J. Langenfelder & Son, Inc., P.O. Box 5106, Baltimore. $1,261,841. Bids 12/22, awarded 12/28. CD 1/4.

▲ **Maryland**—State Rds. Comn., Baltimore, grading, drainage, surf. 3.388 mi. section State Rte. 5 and U.S. Rte. 301, beginning at T.B. and exten. southerly to point approx. 0.274 mi. south of Charles Co. line, Contr. CH-257-1-515, Prince Georges and Charles Counties, to Bero Eng. & Contr. Co., Inc., Box 447, Hampton, Va. $1,124,748. Bids 12/28. (Correction—contractor). CD 1/4, under LB.

Maryland—State Rds. Comn., Baltimore, grading, drainage, surf. 2.473 mi. divided hy. along relocated section of U. S. Rte. 50 (link in National North-South Rte.-via Chesapeake Bay Bridge) beginning approx. 0.5 mi. east of Cox's Creek and exten. east to west approach to proposed Kent/Narrows Bridge, Contr. Q-168-1-215, Queen Annes Co., to C. J. Langenfelder & Son, Box 5106, Baltimore, $902,158. Bids 12/6, awarded 12/28. CD 12/13, under LB.

Maryland—State Rds. Comn., Baltimore, grading, drainage, surf. 4.905 mi. hy. along relocation of U. S. Rte. 29 and Columbia Pike, south of Columbia beginning near Montgomery Rd. and exten. southeasterly toward Atholton, Contr. Ho-218-1-315, Howard Co., to Wilmoth Paving Co., 1 and P Sts. S. E., Wash., D. C., $797,998. Bids 12/22, awarded 12/29. CD 12/7.

▲ **Maryland**—State Rds. Comn., Baltimore, grading, drainage, surf. two sections, divided hy. (1) 3.649 mi. relocated section U. S. Rte. 50, beginning at East limits Grasonville and exten. easterly to Greenspring Rd., (2) 2.08 mi. relocated section of Queenstown and exten. southeasterly toward Wye Mills, Contr. Q-168-2-215, Queen Annes Co., to C. J. Langenfelder & Son, Box 5106, Baltimore, $1,442,506. Bids 12/27, awarded 12/28. CD 12/14.

▲ **Maryland**—State Rds. Comn., Baltimore, grading, drainage, surf. 4.66 mi. divided hy. along a relocation of U. S. 240 Washington National Pike, beginning approx. 0.5 mi. northwest of Urbanna and exten. northerly toward Frederick, Contr. F-425-2-615, Frederick Co., to W. E. Graham & Son, Cleveland, N. C., $1,395,535. Bids 1/15, awarded 12/29. CD 11/21, under LB.

Maryland—State Rds. Comn., Baltimore, grading, drainage, surf. divided hy. U. S. Rte. 140, 3.5 mi., from Finksburg northwesterly toward Westminster, Contr. CL 303-1-315, Carroll Co., to Nello L. Teer Co., Durham, N. C., $942,503. Bids 11/1, awarded 12/23, CD 11/10.

N. C., Charlotte—City, H. A. Yancey, mgr., City Hall, 60 E. Trade St., street imprvs., to Blythe Bros. Co. Inc., 2911 Hutchinson Ave., $72,235. Bids 12/16.

Tennessee—State Hy. Dpt., Nashville, grading, drainage, incl. 1 bridge, 10.43 mi. Sect. State Hy. 34, from point approx. 3 mi. east of Chucky and exten. to Jonesboro city limits, Greene and Washington Counties, to Ralph E. Mills Co., 410 Ann St., Frankfort, Ky., $612,164. Bids 12/16. CD 12/21, under LB.

▲ **Texas**—State Hy. Comn., Austin, flexible base, asph. surf. c. conc. paving, storm sewer and bridges 1.35 mi. Hy. U. S. 75 and St. 35, UI 32 (12) and U 679 (4), Harris Co., to Farnsworth & Chambers Co., Inc., P. O. Box 74, Houston, $1,339,943. Bids 12/13. CD 12/16, under LB.

Tex., Hallettsville—Lavaca County Road Dist. 7, Hallettsville road extens., grading, surf., force account. $77,000. CD 11/17.

Tex., Houston—Greenfield Utilities Corp., c/o Greenfield Sub-Division, grading, open drainage, own forces. $32,000. Douglas & Mansfield, Natl. Standard Bldg., engrs.

Tex., Pasadena—John A. Campbell, c/o Campbell Realty Co., Pasadena, 27 ft. concrete paving, for Sect. 2, own forces. Approx. $68,000. A. C. Stimson, 1304 Rosalie St., Houston, engr.

Tex., Pasadena—John A. Campbell, c/o Campbell Realty Co., Pasadena, Sect. 1, street constr. and asph. paving, own forces. Approx. $85,000. A. C. Stimson, 1303 Rosalie St., Houston, engr.

Tex., Quitman—Wood Co., Courthouse, Quitman, road constr. and surf., own forces. Approx. $75,000. CD 8/14/46.

Tex., Silsbee—Hardin Co., c/o Courthouse, Kountze, 5 mi. hard-surfaced road in Road Dist. 5, $110,000; 2 mi. hardsurf., drainage Village Creek Rd., $55,000, own forces.

Wyoming—State Hy. Comn., J. R. Bromley, supt., Cheyenne, grading, draining, base course surf., 9 rein.-con. culverts, 1 treated timber bridge and misc. 7.243 mi. Lander-Muddy Gap Rd., Fremont Co., to Boatright-Smith, Box 703, Rawlins, $511,547, est. $585,181; grading, draining, 4 treated timber bridges and misc. 9.341 mi. Cody-Clarks Fork Rd., Park Co., to Taggart Const. Co., Box 560, Cody, $110,249, est. $145,-903. Bids 12/16.

Alberta—Dpt. P. Wks., Edmonton, stockpiling grav. for constr. Hy. 16 from Chipman Corner to Vegreville, to Mannix-O'Sullivan Paving Co. Ltd., 332 Seventh Ave. W., Edmonton, Approx. $129,137.

Newfoundland—Dpt. P. Wks., St. John, 22.5 mi. hy. between Grand Bay and Little River, Grand Bay, to Western Constr. Co., Ltd., Curling, Approx. $700,000. Bids 11/30. CD 11/15.

EARTHWORK, WATERWAYS

BIDS ASKED

✝ **Virginia and North Carolina**—B.A. About 1/16—U. S. Eng., P. O. Box 119, foot of Front St., Norfolk, 1 Va., furnishing main control switchboards, automatic oscillograph, station master clock and annunciator equip. for power house, Buggs Island Reservoir. CD 8/3/44.

▲ **Pennsylvania**—B.A. 1/17—Dpt. Forests & Waters, 404 Education Bldg., Harrisburg, construct Tamaqua silt impounding basin in the Schuylkill River Desilting Proj. near West Penn on Little Schuylkill River, $300,000. Plans deposit $10; dredging floodway clearing and excavation in River Sect. III of the Schuylkill River Desilting Proj., $2,500,000. Plans deposit $50. Schuylkill River Project Engineers, 20 S. 15 St., Phila., engrs. CD 7/9/47.

✝ **New Jersey**—B.A. 1/18—U. S. Eng., 80 Lafayette St., New York, 13, N. Y., maintenance dredging approx. 182,200, cu. yds. in Passaic River from Gregory Ave. to 8 St.

✝ **N. Y., Brooklyn**—B.A. 1/19—Construction Officer, Bldg. 77, New York Naval Shipyard, concrete core borings and trench in floor of Drydocks 5 and 6 at New York Naval Shipyard, Spec. 23431. Plans deposit $10.

✝ **Oklahoma**—B.A. 1/19—U. S. Eng., P. O. Box 61, Tulsa, 2 butterfly valves, operating mechanism, housing by-pass valve, embedded parts, and piping, etc. for Tenkiller Dam. $180,000.

✝ **Wyoming**—B.A. 1/19—Bureau Reclamation, Dpt. Interior, Riverton, buried asphaltic membrane lining between Station 863 plus 00 and Station 1601 plus 00 Wyoming Canal, Riverton Proj., about 3 mi. northwest of Riverton and 4 mi. north of Pavillion, Spec. 2890. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

✝ **Oregon**—B.A. 1/20—U. S. Eng., Pittock Block, Portland, drilling, casing, developing 3 water supply wells in Cottage Grove reservoir area, Lane Co., CIVENG-55-026-50-215.

✝ **California**—B.A. 1/24—Bureau Reclamation, Dpt. Interior, Friant, Calif., earthwork, pipelines, structures laterals 88.4 W Station 0 plus 00 to Station 120 plus 58 and lateral 90.4 W Station 0 plus 00 to Station 44 plus 67, Lindmore Irrigation Dist., Friant-Kern Canal Distribution Systems, Central Valley Proj., vicinity of Lindsay, Tulare Co., L. McClellan, Bldg. 1-A, Federal Center, Denver, Colo., ch. engr.

✝ **California**—B.A. 1/24—U. S. Eng., Wright Bldg., Sacramento, excavation for abutments, Folsom Dam, Folsom, Sacramento Co., Spec. 04-167-50-32. Extended date. CD 12/13.

✝ **Louisiana**—B.A. 1/24—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, approx. 430 lin. ft. Spur Dikes, on and adjacent to right descending bank of Red River, Mile 91.0 (1930) in Avoyelles Parish, about 2 mi. from Egg Bend, CIVENG 16-047-50-192.

✝ **New Mexico**—B.A. About 1/25—U. S. Eng., P. O. Box 1538, Albuquerque-Middle Rio Grande Conservancy Dist., repairs to levees and protective works, approx. 5,000 lin. ft Double Row Pile dike; approx. 600 lin. ft. Single Row Pile Dike on the Rio Grande between Isleta and Los Lunas, Serial No. CIVENG-29-005-50-8.

✝ **Idaho, Arco**—B.A. 1/25—At office Manager, Idaho Operations Office, U. S. Atomic Energy Comn., Idaho Falls, concrete aggregates at Atomic Energy Reactor Site near here, Butte Co.

▲✝ **Texas**—B.A. 1/25—U. S. Eng., 606 Santa Fe Bldg., Galveston, outlet works, Belton Dam on Leon River at Mille Springs Site. Inv. $430 lin. ft. Spur Dikes, on and adjacent to right descending bank of Red River, Mile 91.0 (1930) in Avoyelles Parish, about 2 mi. from Egg Bend, CIVENG 16-047-50-192. $2,250,000. CD 12/22.

Tex., Dallas—Bids Asked—Vernon and James Smith, 2154 Fort Worth Ave., drainage, grading for site development. $50,000.

LOW BIDDERS

✝ **California**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Dec. 22, 254,000 lin. ft. 10- to 18-in. standard concrete irrigation pipe and 342,000 lin. ft. 12- to 72-in. rein.-con. pipe, Central Valley Proj., Spec. 2853, concrete pipe, tongue and groove ends, 7 ft. 9 in. minimum laying lengths, from Concrete Conduit Co., Colton, for Schedule 4, Ivanhoe Irrigation District, $1,295,330; Schedule 5, Lindmore Irrigation Dist., Unit 3, $396,-258; Schedule 6, Southern San Joaquin Municipal Utility Dist., Unit 3, $119,389; concrete pipe, rubber gasket joints, 7 ft. 9 in. minimum laying lengths for Schedule 7, Ivanhoe Irrigation District, $232,600; Schedule 8 Lindmore Irrigation Dist., Unit 3, $480,-271; Schedule 9 Southern San Joaquin Municipality Dist. Unit 3, $134,436;***concrete pipe, tongue and groove ends 2 ft. minimum laying lengths, from Pipeline Constr. Co., Riverside, Schedule 1, $88,645*** from Central Valley Concrete Pipe Co., Stockton, Schedule 2, $123,780; Schedule 3, $78,300. CD 11/30.

✝ **Florida**—U. S. Eng., 55 Riverside Ave., Jacksonville, Zone 1, Dec. 28, dredging, repairs to jetties and channel at Lake Worth Inlet, from Powell Bros. Constr. Co., Ft. Lauderdale, $61,970. CD 12/13.

✝ **Illinois**—U. S. Eng., U. S. Courthouse & Custom House, St. Louis 1, Mo., Dec. 28, repairs, enlargement levees Clear and Miller Pond Drainage and Levee Dist. Union Co., CIVENG-23-065-50-49, from M. J. Davidson, 5828 Lindenwood St., St. Louis 9, Mo., $38,210. CD 12/15.

Ind., Fort Wayne—Bd. P. Wks., Fort Wayne, Dec. 20, imprv. St. Mary's River and widen river, incl. removal 51,620 cu. yd. soil on south bank of river east of Van Buren St. Bridge and cut down 24,680 cu. yd. north bank of river west of Wells St., from Grice-Jaeger Constr. Co., 921 W. Wildwood St., $38,000, Est. $45,000. CD 12/12.

La., Shreveport—Caddo Levee Dist., Shreveport, Dec. 29, repairing Five Point Dike on Red River, near here, from Pine Bluff Sand & Gravel Co., Pine Bluff, Ark., $37,704.

✝ **North Dakota**—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, rejected bids Nov. 18, emergency gates for Garrion Dam Proj., Inv. 30, L. B. $102,809. CD 11/2.

▲✝ **Texas**—U. S. Eng., 606 Santa Fe Bldg., Galveston, Dec. 22, spillway, Lavon Dam and Reservoir, Trinity River and Tributaries, in Collin Co. approx. 7 mi. north of Rockwall, 2 mi. west of Lavon and 25 mi. northeast of Dallas, CIVENG-41-243-50-78, from Texas Constr. Co., P. O. Box 5297, Dallas $1,970,294. CD 112.

Tex., Houston—W. T. Carter, Union Natl. Bank Bldg., Dec. 27, dam and spillway repairs and extens. on Memorial Dr. in Sherwood Forest Addn. from Marvin Brown, Inc., 4505 Dixie Dr. Approx. $29,000. Est. $35,000. CD 12/20.

✝ **Washington**—Bureau Reclamation, Dpt. Interior, Coulee Dam, Wash., earthwork and structures for West Canal, Schedule 1, Station 1229 plus 74 to 1545 plus 47.84 Quincy pump lateral and excav. for Quincy Pumping Plant and Schedule 2, Station 1545 plus 47/84 to 1992 plus 50, from Marshall Haas and Royce and Haas & Rothschild, Belmont, Calif., $983,631; Schedule 3, Station 1992 plus 50 to 2044 plus 50, from Minnis & Shilling Eugene, Ore., $396,961. CD 11/28.

CONTRACTS AWARDED

✝ **Arkansas**—U. S. Eng., P. O. Box 97, Memphis, 1, Tenn., Dec., 13, placing approx. 670,000 cu. yd. levee construction west bank of St. Francis River vicinity of Blue Cane, Clay and Greene Counties, CIVENG-40-041-50-64, to Atlas Constr. Co., Waxahachie, Tex., $92,661. Bids 12/13.

✝ **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, excav. approx. 6,000,000 cu. yd. material for channel imprvs., Vermillion Parish, CIVENG 16-047-50-139, to McWilliams Dredging Co., 860 St. Charles St., New Orleans, $748,410. Bids 12/16, awarded 12/29. CD 12/29.

▲✝ **Montana**—Bureau Reclamation, Dpt. Interior, Columbia Falls, clearing part of Hungry Horse Reservoir Site, Schedules 1 and 3, to Wixson and Crowe, Inc., Redding, Calif. $2,446,850; Schedules 2, 4 and 5, to J. H. Tristdale, Redding, Calif., $2,484,360. Bids 12/20, awarded 12/29. CD 12/29, under LB.

Tex., Beaumont—Jefferson County Drainage Dist. 6, Beaumont, 519,338 cu. yd. channel excav. on N. Fork Taylors Bayou, Jap Rd. to State Hy. 124 to D. A. Franzen, Winnie, $51,934. Est. $65,000. Bids 12/23. Charles Davidson, c/o owner, co. engr.

Tex., Fort Worth—Tarrant Co., Courthouse, channel for Silver Creek, to Landers Constr. Co., Waxahachie, $32,097. Est. $28,000. Bids 12/30. Henry Cook, c/o owner, co. engr.

✝ **Washington**—Bureau Reclamation, Dpt. Interior, Coulee Dam, earthwork, asph. membrane lining, pipelines and structures for Area E-1, laterals and sublaterals except lateral EL20 and sublaterals East Low Canal lateral, Schedule 1, precast concrete pipelines and structure, to Collins Concrete & Steel Pipe Co., 3481 N. Columbia Blvd., Portland, Ore., $919,486. Bids 12/14, awarded 12/23. CD 12/22, under LB.

AIRPORTS AND AIRBASES

BIDS ASKED

✝ **Ga., Glynco**—RAILROAD TRACK, etc.—B.A. 1/18—Charleston Naval Base, P. O. Box 365, Charleston, S. C., rehabilitation 4 mi. railroad track, bldg. 11 grade crossings and installing culvert pipe at U. S. Naval Air Facility. Plans deposit $10.

✝ **Calif., Muroc**—TEST STATION—B.A. 1/24—U. S. Eng., 751 S. Figueroa St., Los Angeles, rocket engine test station, Muroc Air Force Base, Eng. 04-343-50-11. $250,000. CD 12/15.

✝ **Wash., Walla Walla**—OFFICES, etc.—B.A. 1/24—U. S. Eng., 19 E. Poplar St., conversion of Bldg. 710 at Walla Walla Air Base into offices, locker storage area and recreation area, CIVENG-45-164-50-76.

LOW BIDDERS

✝ **Ga., Winder**—AIRPORT IMPRVS.—Civil Aeronautics Admin., 84 Marietta St. N.W., Atlanta, Dec. 28, airport imprvs., from C. F. Sheeley Builders, Inc., Decatur, $76,867.

CONTRACTS AWARDED

Ariz., Phoenix—RUNWAY—City, First Ave. and Washington St., rebuilding east-west runway, Sky Harbor Airport, to Fisher Contg. Co., 2201 S. 19 Ave. $309,-889. Awarded 12/27. Johannessen & Girand, First Natl. Bank Bldg., engrs. CD 3/17/48.

✝ **O., Cleveland**—EXHAUST GAS PIPELINE—National Advisory Comn. on Aeronautics, Lewis Flight Propulsion Laboratory, Cleveland Airport, exhaust gas piping, fabricate and install approx. 150 tons, 13 ft. diam., steel pipe with supports, to Robert Carter Co., 125 S. Erie St., Toledo, $94,343. Approx. $50,000. Bids 11/15, awarded 12/11. P. Miller, c/o owner, contract administrator. CD 11/1.

Pa., Beaver Falls—AIRPORT—City, construct buildings, preparation site and paving runways, taxiways and aprons, at Beaver Falls Airport, to Nardulli Constr. Co., 947 Butler St., Etna. $159,727. CD 7/14/48.

Tex., Dallas—HANGAR—Pioneer Air Lines, Republic Bank Bldg., hangar, own forces. $275,000. CD 12/12.

Yukon Territory, Whitehouse—WATER PIPELINE—Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., water pipeline at Air Station, to Poole Constr. Co., Ltd., 10503 109 St., Edmonton, Alta., Approx $45,-000.

FOREIGN

India—Government of India, New Delhi, receiving bids 3 mi. earthwork and concrete dam across Mahanadi River at Hirbkud, 7 mi. from Sambalpur in Orissa Province, in. hydro-electric station. $100,000,000.

LATIN AMERICA

B. W. I., Leeward Islands, Nevis—Owner c/o contractor, hotels, yacht club, shopping centre, power house, laundry and residential area, to Hutchings & Milani, P. O. Box 485, Hamilton, Bermuda, $3,000,000.

PUBLIC BUILDINGS

✝ **Arizona**—BUS STRUCTURE — B.A. 1/17 — Bureau Reclamation Dpt. Interior, Phoenix, bus structure for Prescott substation Davis Dam Proj., Spec. R3-PX-31, (Region 3). L. N. McClellan, Bldg. 7-A, Denver Federal Center, Denver, colo., ch. engr.

N. C., Raleigh — DORMITORIES — B.A. 1/18 — State School for Blind & Deaf, Raleigh, 1 story, 10,000 sq. ft., masonry, steel, concrete boys' and girls' dormitory for Negroes. Plans deposit $50. Wm. H. Deitrick, Inc., Hargett St., archt.

Que., Asbestos—SCHOOL—B.A. 1/18—A. L. Perry, archt., 1424 St. Catherines St. W., Montreal, 1 story, part bsmnt., 23x116 ft., Y-shaped concrete block, brick veneer high school outside Danville, near here, for Protestant School Municipality of Asbestos-Danville-Shipton. H. W. Goodenough, secy., Danville. Approx. $300,000. CD 1/3.

La., Morgan City—SCHOOL—B.A. 1/19—St. Mary Parish School Bd., Morgan City, 122x313 ft., brick, concrete block, Julia B. Maitland School. Plans deposit $20. Favrot, Reed, Mathes & Bergman, Nola Bldg., New Orleans, archts.

Pa., Elkins Park—EDUCATION—B.A. 1/19—Cheltenham Twp. School Dist., Elkins Park, industrial education bldg. $250,000. Heacock & Platt, 152 N. 15 St., Phila. archts. CD 11/28/45.

Puerto Rico, Ponce—COMMUNITY CENTERS—B.A. 1/20—Municipal Housing Auth. of Ponce, Ponce, 2 community center bldgs., one at Baldorioty Housing Proj., at Guayanilla Rd. and Villa St., Ponce, P. R. and other at Boriquen Housing Proj., at Cantera St., Ponce. Plans deposit $10 each. CD 5/24/44.

O., Mogadore—HIGH SCHOOL—B.A. 1/21—Bd. Educ., Mrs. Myra Bowlin, clk., Cleveland Ave., high school. Plans deposit $20. W. B. Huff, 1050 N. Main St., Akron, Zone 10, archt.

Calif., Oakland—SCHOOL—B.A. 1/24—Bd. Educ., 1025 2 Ave., 31,700 sq. ft., wood frame Brookfield School. $350,000. Plans deposit $25. Fred L. Confer & Raymond G. Willis, 366 40 St., archts. CD 8/11/48.

▲ **Warrensville, O., SPITE**—B.A. 1/24—Comrs. Cuyahoga Co., Courthouse, Lakeside and Ontario Sts., Cleveland, 4 story, bsmnt., brick, concrete, steel tuberculosis hospital. $4,900,000. Plans deposit $100. George S. Rider, 3800 Terminal Tower, Cleveland, engr. and archt. CD 8/24.

Tex., Columbus—SCHOOLS—B.A. 1/24—Columbus Independent School Dist., Columbus, 2 elementary schools, one Negro and one White, brick, walls, concrete frame and fdn. $325,000. Carl Stautz, 1704 Exposition Blvd., Austin, archt. CD 11/15.

✝ **Puerto Rico, Fort Brooke**—FAMILY QUARTERS—B.A. 1/25—U. S. Eng., Box 5043, Ancon, Canal Zone, 4-family quarter bldgs., Serial No. Eng-96-505-50-22.

LOW BIDDERS

Calif., Lawndale—STUDENT UNION, etc.—El Camino Juniar College Dist., 3125 Redondo Beach Blvd., Dec. 23, 27,000 sq. ft. student union-cafeteria bldg., from Harvey Nichols Co., 926 E. Slauson Ave., Los Angeles, $414,000. Est. $400,000. CD 12/2.

Calif., Long Beach—HEALTH CENTER—City Council, Dec. 21, 1 story and part 2 story, 28,000 sq. ft. health center bldg. Pine and Willow Aves., from Curlett Constr. Co., 820 W. Esther St., Long Beach, $447,625. CD 12/8.

Ga., Atlanta—GYMNASIUM—City Bd. Educ., City Hall, Dec. 30, gymnasium at O'Keefe High School, from Ivey Bros. Constr. Co., 3111 Peachtree Rd. N.E., Atlanta, $263,396. CD 12/7.

Kan., Overland Park—SCHOOL—Hickory Grove School Dist. 40, Overland Park, Dec. 21, general and mechanical contract, Hickory Grove School addn. near here, from Haren & Laughlin Constr. Co., 953 Minnesota Ave., Kansas City, Kan., $251,772, Est. $250,000.

Ill., Pontiac—POWER HOUSE—State, Springfield, Dec. 20, power house at Pontiac branch, Illinois State Penitentiary, from R. V. Menaham Constr. Co., 1951 W. Irving Park Blvd., Chicago, $305,825. CD 3/8/46.

† **Md., White Oak**—RESEARCH TANK—P. Wks. Officer, Naval Gun Factory, Wash., D. C., 40x60 ft. welded steel plate, research tank, incl. motor operated platform hoists, Naval Ordnance Laboratory, NOY 19456, from Rogers & McGrath, 132 Third St. S.E., Wash., D. C., $114,000. CD 7/26/48.

Mich., Plymouth—SCHOOL—Bd. Educ., 292 S. Main St., rejected bids Dec. 6, 1 story, 177x230 ft., irregular shaped, school. Will re-advertise. CD 12/14.

N. M., Albuquerque—WAREHOUSE, etc.—Bd. Educ., Alubuquerque, Dec. 27, warehouse and shop, from S. V. Patricks, Albuquerque, $86,370. CD 11/3.

O., Lisbon—SCHOOLS—Bd. Educ., Beaver Rural School Dist., Lisbon, Nov. 28, four schools at Calcutta, Rogers, Elkton and West Point, from Madden Constr. Co., East Palestine, $305,000. CD 11/23.

S. C., Columbia—INDUSTRIAL SCHOOL—State of South Carolina, Columbia, Dec. 28, industrial school for girls from M. B. Kahn Constr. Co., Lady St., $310,000. CD 12/7.

Tex., Hearne—POWER PLANT—City, Dec. 16, municipal electric power plant, diesel engine unit, from The National Supply Co., Magnolia Bldg., Dallas, $90,850.

Tex., Pecos—HIGH SCHOOL—Reeves & Pecos Independent School Dist., Pecos, Dec. 29, high school, incl. 4 room elementary school, brick, hollow tile, rein.-con., from B. F. King, Box 241, Kermit, $263,000. Est. $275,000. CD 12/16.

Tex., Rankin—SCHOOL—Rankin Independent School Dist., Rankin, Dec. 29, school and gymnasium, from Rose Constr. Co., 1117 Walnut St., Abilene, and Evans & Taylor, Box 1222, San Angelo, $267,409. Est. $250,000. Wilson & Patterson, Majestic Bldg., Fort Worth, archts.

† **Va., Dahlgren**—HOUSES—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., cancelled bids to have been opened Dec. 21, two 1 story houses at Naval Proving Ground, Spec. 23367. CD 12/12.

† **Washington**—STRUCTURES, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Dec. 20, bus structures with current and potential transformers disconnecting and grounding switches, generator-protective equip. for Units R7, R8 and R9, Grand Coulee Power Plant, Columbia Basin Proj., Spec. 2827, from Realty & Industrial Corp., Bethlehem, Pa., $120,885. CD 11/10.

Ont., Centralia—SCHOOL—Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, cancelled bids to have been opened Dec. 15, 18 room school at site D.N.D. Housing Development at R.C.A.F. Station. CD 12/1.

CONTRACTS AWARDED

Colo., Greeley—SCHOOL—Bd. Educ., Greeley, general contract 1 story, 8 classroom brick Twelfth Street Grade School, and 1 story part bsmnt., 30,600 sq. ft., Fourth Street Grade School, to Hensel Phelps, Greeley, $374,000. Bids 12/21, awarded 12/23. CD 12/5.

▲ **La., Shreveport**—HOUSING—City of Shreveport Housing Auth., c/o contractor, 270 housing units to J. A. Jones Constr. Co., 354 Areo Dr., $1,685,000. Bids 12/15. CD 12/28.

Mass., Attleboro—HOUSING—City of Ailtleboro Housing Auth., J. E. Turner, chn., 27 Park St., 93 unit garden apts., South St. section, Proj. State Aided Attleboro 200-1, to A. F. Smiley Constr. Co., 115 Trenton St., Pawtucket, R. I., $937,000. Bids 12/15. CD 11/22.

▲ **Mich., Ann Arbor**—DORMITORY—Regents of University of Michigan, Admin. Bldg., 9 story, masonry, concrete, steel men's dormitory, to Bryant & Detwiler Co., 2304 Penobscot Bldg., Detroit, $2,639,000, Bids 12/6, awarded 12/21. CD 12/19.

Mich., Waterford—SCHOOL—Bd. Educ., Waterford Twp., 1150 Scott Lake Rd., 2 story, L-shaped, 63x229 ft. and 62x94 ft. rein.-con. masonry high school, to C. H. Reisdorf, 831 Fox Bldg., Detroit, $709,370. Bids 12/14, awarded 12/20. CD 12/30, under LB.

† **Montana**—POWER PLANT IMPRVS.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Spec. 2811, Missouri River Basin Proj., three 16,667-kva. vertical-shaft alternating-current generators for Canyon Ferry Power Plant, to General Electric Co., 650 17 St., Denver, Colo., $887,074, incl. spare parts f.o.b. Schenectady, N. Y. Bids 12/1, awarded 12/23. CD 12/13.

▲ **N. J., Trenton**—LABORATORY IMPRVS.—Yards & Docks Annex, Nevy Dpt., Arlington, Va., installing air heating, cooling and dehumidifying and refrigeration equip. at Naval Aeronautical Turbine Laboratory, to Mehring & Hanson Co., Arlington, Va., $1,397,000. Bids 12/15, awarded 1/4. CD 12/22, under LB.

† **N. M., Los Alamos**—BUILDING ALTERATIONS—U. S. Atomic Energy Comn., Los Alamos, Building alterations, addn., Proj. A-T-2, Inv. No. 291-50-38, to Robert E. McKee, Box 1706, Santa Fe, $182,024. Est. $250,000. Bids 12/14. CD 11/23.

N. Y., Napanoch—CELL BLOCK—Bureau Contracts & Accounts, Albany, Cell Block Bldg. 49 at Institute of Male Defective Delinquents, to Walter A. Stanley Constr. Co., Inc., Railroad Ave., Ossining, $850,000. Bids 10/26. CD 11/1, under LB.

N. Y., Wassaic—INFIRMARY—Bureau Contracts & Accounts, Albany, Infirmary Bldgs. 54 and 55, to Walter A. Stanley Constr. Co., Railroad Ave., Ossining, $577,000. Bids 10/13. CD 10/19, under LB.

O., Cincinnati—SCHOOL—Bd. Educ., 216 E. 9 St., general contract 2 story, bsmnt., 105x302 ft., brick, concrete Riverside-Harrison School, to Penker Constr. Co., 1030 Summer St., $810,287. Est. $750,000. Bids 8/29. Hunt & Allen, 194 W. Main St., engrs. and archts.

O., Painesville—HIGH SCHOOL—Bd. Educ., Painesville Local Courthouse, 2 story, bsmnt., brick Riverside High School addn., incl. machine shops and woodworking shop, 4 wings to Schirmer Schneider Co., 2719 Detroit Ave., Cleveland, $448,428. Est. $767,000. Bids 12/22, awarded 12/26. CD 12/2.

O., Willard—LIGHT PLANT—Bd. Pub. Affairs, Willard, 60x90 ft. municipal light plant addns. housing 2,500 kw. generator, to Roth Bros., Norwalk. Approx. $120,000.

Ore., West Linn—SCHOOL—School Dist. No. 3-C, West Linn, 16 room, rein.-con., brick faced school, to A. V. Petersen, 2827 N. E. Glisan St., Portland, $260,940. Bids 12/29. CD 12/16.

Tex., Garland — HIGH SCHOOL — Garland Independent School Dist., H. D. Pearson, supt., Garland, 2 story masonry Junior High School, to Sachs & Stevens, Wholesale Merch. Bldg., Dallas, $274,349. Bids 12/21. CD 12/14.

Tex., Houston—HOUSING—City, City Hall, 900 Brazos St., 30 addnl. housing units, Maple St., day labor. Approx. $275,000. CD 4/26.

B. C., Fraser View—HOUSES—Central Mortgage & Housing Corp., 360 Homer St., Vancouver, 125 houses, to Biltmore Constr. Co., Ltd., 7441 Granville St., Vancouver. Approx. $875,000. J. L. Adams, c/o owner, engr.

COMMERCIAL BUILDINGS

BIDS ASKED

▲ **Ill., Chicago**—APARTMENT—B.A. 1/17—Owner, c/o Loebl, Schlossman, & Bennett, 333 N. Michigan Ave., 21 story, brick apartment, Lake Shore Dr. and Barry St. $3,000,000. CD 9/23.

▲ **Ariz., Phoenix**—Y.M.C.A.—B.A. 1/23—Young Mens Christian Assn., Second Ave. and Adams St., 7 story, steel, concrete Y.M.C.A. building. $1,200,000. Lescher & Mahoney, Title & Trust Bldg., Phoenix, archts. CD 12/3/45

Ill., Chicago—OFFICE, etc.—Bids Asked—Admiral Corp., 1901 N. Springfield St., Zone 47, 2 story, bsmnt. office and warehouse. $800,000. Paul Gerhardt, 449 W. Fullerton St., Zone 14, archt. CD 12/15.

Ill, Chicago—APARTMENT—Bids Asked—Herbert Sobel, 1315 Astor St, Zone 10, 3 story, apartment remodel and top addn. $350,000. Sobel & Drielsma, 646 N. Michigan St., Zone 11, archts.

Ind., Indianapolis—SALES and STORAGE—Bids Asked—Singer Sewing Machine Co., 149 Broadway, New York, N. Y., 2 story, 45x150 ft., brick, rein.-con., structural steel sales and storage bldg., 1618 N. Meridian St. $275,000. Burns & James, 333 N. Pennsylvania St., archts.

SOON LETS CONTRACT

Mich., Grosse Point Woods—HOME—Protestant Childrens Home of Detroit, 900 Cook Rd., soon lets contract 2 story, 41x65 ft. and 16x21 ft. childrens home, Houses A and B, 1 story, 25x78 ft. supt. residence, 2 story, 26x72 ft., 31x99 ft. and 34x87 ft. irregular shaped, masonry and concrete, structural steel, admin. bldg. $250,000. Plans deposit $25. Smith Hinchman & Grylls, 800 Marquette Bldg., Detroit, archts.

N. J., Trenton—SCHOOL—Holy Angels Roman Catholic Church, 715 S. Broad St., soon lets contract parochial school. $275,000. William W. Slack & Son, 1401 W. State St., archts. CD 1/23.

Tex., Dallas—STORES—Sam Lobello & L. J. Hexter, 1312 Main St., soon lets contract 4-unit stores 47,100 sq. ft., steel frame, brick, hollow tile, concrete slab fdn., $275,000. Extended date. DeWitt & Swank, 2025 Cedar Springs Rd., archts. CD 12/21.

LOW BIDDERS

Fla., Miami Beach — ATHLETIC CENTER — Community Holding Corp., c/o B. Robert Swartburg, archt., 126 24 St., Miami Beach, Dec. 23, athletic center, from Zaret Constr. Corp., 1901 West Ave., Miami Beach. Approx. $500,000. CD 12/21.

O., New Philadelphia—HOSPITAL—Union Hospital, Iron Ave., Dover, 2 wings to hospital and remodeling old bldg., from Wendling Bros. Co., 933 Wooster Ave., Dover. $600,517. CD 9/6/45.

CONTRACTS AWARDED

Ala., Birmingham — RESIDENTIAL DEVELOPMENTS — Kinard Constr. Co., Inc., Route 4, Box 378, Bessemer, several residential developments, 2900 block Ave. I and Court H. Owner builds. Approx. $250,000.

Ala., Mobile—SHOPPING CENTER—Owner, c/o Richard A. Vander Sys, archt., 61 N. Royal St., shopping center, to T. H. Davis, 2508 Osage St., $264,958. CD 1/3, under LB. bids.

Ariz., Ajo—RESIDENCES—Phelps Dodge Corp., Ajo, 135 residences at two sites for Phelps-Dodge employees, to Farmer & Godfrey, N. 36 St., Phoenix. $740,821. Awarded 12/16. Lescher & Mahoney, Title & Trust Bldg., Phoenix, archts.

Ariz., Tucson—CLUB, etc.—Scottish Rite, Scott and Stone Aves., 4 story club and office, to F. B. Pachecho, Tucson. $310,000. Awarded 12/24.

▲ **Calif., Covina**—DWELLINGS—Covina Estates, 8521 Lincoln Blvd., Los Angeles, 250 frame, stucco dwellings. Owner builds. $1,000,000. Walter Warner, 12235 Ventura Bldg., Los Angeles, archt.

Calif., Lawndale—DWELLINGS—J. M. P., Inc., 8617 4 Ave. Inglewood, 100 frame, stucco dwellings. Owner builds. $600,000. Southwest Drafting Service, 2724 W. Florence Ave., Los Angeles, archts.

Calif., Oakland—OFFICE—Hospital Service of California, 360 14 St., 3 story, 75x100 ft., structural steel office, to Swinerton & Walberg, 1723 Webster St. $540,000. Fred L. Confer & Raymond G. Willis, 366 40 St., archts. CD 12/28, under LB.

Conn., Hartford—OFFICE—Pearl Street Corp., 95 Pearl St., 7 story, brick, steel office, Pearl St., to Edward Pactor Co., 11 Asylum St. Approx. $550,000. Willard Wilkins, 957 Asylum St., archt.

Conn., West Hartford—CHURCH—St. Thomas the Apostle Roman Catholic Parish, John F. Callahan, pastor, 863 Farmington Ave., 1 story, superstructure brick, stone church Farmington Ave. and Dover Rd., to H. Wales Lines Co., 184 State St., Meriden. $374,870. Bids 12/15. CD 11/22.

Fla., Pensacola—HOSPITAL—Pensacola Baptist Hospital, c/o contractor, hospital, to Dyson & Co., W. Intendencia St. $945,425. Bids 12/14. CD 12/20, under LB.

▲ **Ill., Chicago**—ORPHANAGE—Angel Guardian Orphanage, 2001 W. Devon St., Zone 45, six 2 story orphanage bldg. addns. with connecting corridors, to E. H. Moarhoefer Jr., Co., 505 N. La Salle St., Chicago, Zone 18. $1,250,000. Awarded 12/21. CD 11/25.

Ill., Chicago—OFFICE—Central States Bldg. & Realty c/o Ralph C. Harris, 53 W. Jackson St., Zone 4, office, Ohio St. between McClurg and Fairbanks Sts., to Kinnare Corp., 2816 W. Monroe St., Zone 12. $250,000. Bids 11/5, awarded 12/22. CD 10/14.

▲ **Ill., Chicago**—APARTMENTS—860 Lakeshore Drive Trust, 332 S. Michigan St., Zone 4, two 284 suites steel, concrete glass walls apartment, 100 car garage, to B. W. Handler Constr. Co., 223 W. Jackson St., Zone 6. $4,600,000. Ludwing Mies Vander Rohe, 37 S. Wabash St., Zone 3, and Pace Assocs., 53 W. Jackson St., Zone 4, archts. Holsman, Holsman, Klekamp & Taylor, 39 S. State St., Zone 3, assoc. archts. CD 11/11. Bids 11/30, awarded 12/26.

Ill., Chicago—SCHOOL—Freechurch Bible Institute, 1276 W. Berteau St., Zone 13, 3 story, bsmnt., 90x150 ft., steel, concrete, brick school, to Oak Park Constr. Co., 7140 W. North Ave., Zone 35, $300,000. Awarded 12/16. C. Haeuser, 2051 Wisconsin Ave., Milwaukee, Wis., archt.

▲ **Ill., Chicago**—RESIDENCES—Marlawn Builders Inc., 1417 W. 87 St., Zone 20, 125 one story, bsmnt., brick, stone residences in area of Kedzie Ave. and 71 St., Zone 29. Owner builds. Approx. $1,000,000. H. E. Anderson, 7915 S. State St., Zone 19, archt.

Ill., Chicago—RECTORY, etc.—St. Andrew's Parish, Addison and N. Paulina Sts., Zone 13, 3 story, 4,000 sq. ft. rectory addn.; 1 story, 15,000 sq. ft. gymnasium; 8,000 sq. ft. convent; 3 story, 24,000 sq. ft. school, to Warner Constr. Co., 5801 N. Clark St., Zone 26. $290,000. Awarded 12/12. CD 9/29.

Ill., Evanston—OFFICE—Washington National Insurance Co., 510 Church St., 7 story, steel, concrete office, Chicago Ave. near Davis St., to R. C. Wieboldt Co., 2353 Blue Island Ave., Chicago, Zone 8, $500,000. Graham Anderson, Probst & White, 80 E. Jackson St., Chicago, Zone 4, archts. CD 9/8/44.

▲ **Ill., Niles**—RESIDENCES—Shekelton Land Co., 5446 S. Oak Park Ave., Chicago, Zone 38, 150 residences, near Howard and Milwaukee Aves., masonry contract, to Dominick Losacco, 4101 N. Pueblo St., Zone 34, and carpentry work, to Anderson & Espling, 5423 N. Ashland St., Chicago, Zone 40, Approx. $1,500,000. A. J. Del Bianco, 4938 W. Irving Park Ave., Chicago, Zone 41, archt.

▲ **Ind., Fort Wayne**—HOUSING—Ralph L. Shirmeyer, 435 Cal-Wayne St., 697 unit housing development in Mt. Vernon Park addn., 111 acre site bounded by McKinnie Ave., Winter St., Anthoney Blvd., Gaywood Dr., and Paulding Rd. (Thrift Homes of National Homes Corp., Lafayette), shopping center. Owner builds. $3,000,000.

▲ **Ind., Indianapolis**—BANK—Indiana National Bank, Pennsylvania St. and Virginia Ave., 5 story, limestone, brick, rein.-con., structural steel bank addn., to Wm. P. Jungclaus Co., 825 Massachusetts Ave., approx. $1,000,000. Awarded 12/27. D. A. Bohlen & Son, 930 State Life Bldg., archts.

Kan., Kansas City—GRAIN ELEVATOP—Farmers Union Jobbing Assn., Bd. Trade Bldg., concrete grain elevator with 1,000,000 bu. capacity, to McDonald Constr. Co., 188 Randolph St., Chicago, Ill. Approx. $600,000. Horner & Wyatt, 516 Dwight Bldg., Kansas City 6, Mo., engrs.

Ky., Florence—RESIDENCES—Wright Realty Co., 60 McAlpin Ave., Erlanger, thirty-nine 1 story, bsmnt., brick residences, separate contracts, $399,500. CD 12/2.

Ky., Louisville—OFFICE—Speed Industries, c/o contractor, office bldg., to Otho Tapp, 418 W. Liberty St. $350,000.

Md., Baltimore—APARTMENTS—Lenton Heights Apartments, 202 E. 25 St., Zone 18, 116 unit, 2 story, 200 ft., 150 ft., 250 ft., 24x28 ft., masonry, apartments, 800-13 Lenton Ave., 800-16, 801-25 Dartmouth Rd., to Hogan & Platt Realty Co., 202 E. 25 St., Zone 18. $290,000. Kenneth C. Miller, 2203 N. Charles St., Zone 18, archt.

▲ **Md., Baltimore** — APARTMENTS — Maplewood Apt. Corp., Charles and Thomas Mullan, 3945 Greenmont Ave., Zone 18, nine 147 unit 2 and 3 story, bsmnt., concrete, brick, garden type apartments, to Mulland Contg. Co., 3945 Greenmount Ave., Zone 18. $1,000,000. Cyril H. Hebrank, 20 E. Lexington Ave., archt. Wm. M. Maynadier, 500 Washington Ave., Towson, engr.

Mass., Dennisport—HOUSING—Louis A. Byrne, Main St., about 35 single frame houses, Trotting Park Rd. Owner builds. $260,000.

Minn., Minneapolis—APARTMENTS—Maurice Mandel, 322 Lumber Exchange Bldg., four 11 unit 135x192 ft. apartments, Hy. 7 and Elm Pl., Galkin Lake. Owner builds. $500,000.

Mich., Detroit—STORES—Grand River-Whitcomb Realty Co., c/o Theo. Rogvoy, archt., 929 Fox Bldg., eight 2 story, 138x268 ft., masonry, concrete, structural steel stores, to Darin & Armstrong, Inc., 2041 Fenkell Ave., $250,000. Awarded 12/30. CD 12/9.

▲ **Neb., Omaha**—APARTMENT—Ernest Rorick & Rorick Constr. Co., 905 S. 20 St., apartment 22 and St.

Marys Ave. Owner builds. Approx. $2,000,000. M. J. Lahr, Standard Oil Bldg., archt.

N. J., Trenton—STORE, etc.—F. W. Woolworth Co., Woolworth Bldg., New York 7, N. Y., 3 story, 65x240 ft., steel, concrete merchandising structure, selling areas on main and bsmnt. floors, office and locker facilities, storage and stock rooms, lunch counter, to Turner Constr. Co., 420 Lexington Ave., New York 17, N. Y. Approx. $900,000.

▲ **N. J., Westville**—RESIDENTIAL DEVELOPMENT—Whitney Home Builders, 704 Commercial Trust Bldg., Phila., Pa., residential development, Old Broadway, separate contracts. $2,550,000.

▲ **N. Y., Mt. Vernon**—APARTMENT—Corporation, c/o contractor, 150 apartment co-operative garden-type housing development on 8 acre site, S. Fulton Ave. and Sanford Blvd., to O'Brien-Fortin Corp., 101 Park Ave., New York, Zone 17. Approx. $1,500,000.

▲ **N. Y., New York**—APARTMENT—Astor Estate, 535 Fifth Ave., Zone 17, 15 story, 200 unit apartment Madison Ave. between 61 and 62 Sts., to John Lowry, Inc., 52 Vanderbilt Ave., Zone 17. Approx. $2,000,000. Kenneth B. Norton, 1 E. 44 St., Zone 18, archt.

▲ **N. Y., New York**—APARTMENT—Samuel Rudin, 36 W. 44 St., Zone 18, 300 unit apartment, west block-front of Fifth Ave. between W. 8 St. and Washington Square North. Owner builds. Approx. $3,000,000. CD 7/14/48.

▲ **N. Y., New York**—OFFICE—Percy and Harold D. Uris, 730 Fifth Ave., Zone 19, 25 story office bldg., Madison Ave. between 46 and 47 Sts., replacing Ritz Carlton Hotel. Owner builds. Approx. $20,000,000. Emery Roth & Sons, 18 E. 48 St., Zone 17, archts.

O., Chagrin Falls—HOMES—J. R. O'Grady, 1481 Green Rd., Cleveland, 20 frame, brick homes, N. Woodland, south to Fairmont Blvd., Beachwood Village, separate contracts. Approx. $300,000.

O., Cincinnati—APARTMENT—Wm. C. Jungclass, 740 Lafayette Ave., 10 three story bsmnt., brick apartments at Deer Park, separate contracts. $600,000. CD 7/29.

O., Columbus—STORE—H. L. Green Co., Inc., 902 Broadway, New York, N. Y., 2 story store, 57-67 S. High St. Owner builds. $325,000. George Schwartz, c/o owner, archt.

▲ **O., South Euclid**—HOMES—Meyer Goldstein, 2715 Normandy Rd., Cleveland, one hundred 1½ story 30x30 ft. frame homes, separate contracts, $1,200,000.

Pa., Collingdale—APARTMENT—Brothers Constr. Co., 1225 Carlton St., Phila., apartments, Woodlawn Ave., separate contracts, $250,000. Richard R. Neely Assoc. & Charles Fulker, 10 S. 18 St., Phila., archts.

Pa., Elkins Park—RESIDENCES—Stratford Development Co., 1027 Callowhill St., Phila., residential development, Woodlawn Ave., separate contracts, $250,000.

Pa., Erdenheim (Phila. P.O.)—RESIDENCES—Richard A. Warner, Barren Hill, residential development, Gordon Rd., etc., separate contracts. $250,000.

Pa., Havertown—RESIDENCES—Owner c/o P. H. Damsker, engr., 6032 Market St., Phila., residential development, Aronimink Sect., separate contracts. $737,000.

Pa., Lansdowne—RESIDENCES—Gladstone Manor, Inc., 6032 Market St., Phila., residential development, Gladstone Manor Sect., separate contracts. $250,000. P. H. Damsker, 6032 Market St., Phila., engr.

▲ **Pa., Phila.**—BANK and OFFICE—Bankers Security Trust Co., 1325 Walnut St., BANK and office, Broad and Walnut Sts., to Turner Constr. Co., 1500 Walnut St. $1,000,000. Thalheimer & Weitz, 1325 Walnut St., archt. for office. Robert Montgomery Brown, 1728 Spruce St., archt. for bank sect. CD 11/30.

Pa., Phila.—RESIDENCES—Guyer Park Homes, c/o general contractor, residential development, Guyer Ave., to Louis Feldsher & Son, 2534 W. Thompson St. $250,000.

Pa., Phila.—RESIDENCES—Kevy K. Kaiserman, 52 and Montgomery Aves., residential duplex development, Godfrey Ave. and York Rd., separate contracts. Approx. $500,000. J. Ethan Fieldstein, 1325 Walnut St., archt.

Pa., Phila.—RESIDENTIAL DEVELOPMENT—Owner, c/o general contractor, residential development, Henry Ave., etc., to Sydney Robin, 1630 W. Thompson St. $250,000.

S. C., Sumter—APARTMENT—Birnie Apartments, c/o contractor, 75 apartment units, to Boyle Constr. Co., Sumter. Approx. $300,000.

Tex., Beaumont—HOUSING—The Ayrshire Corp., 6825 Academy St., Houston, 10 housing or efficiency bldgs., day labor. Approx. $550,000. CD 12/29.

Tex., Bellaire—DWELLINGS—R. E. Boyker & Jack West, 4015 Case St., 40 dwellings, off Avenue B, own forces. $425,000. CD 12/23, under Tex., Houston.

Tex., Dallas—APARTMENT—McDaniel & Delsing, 2900 W. Davis St., apartment. Owner builds. Approx. $250,000. CD 1/3.

Tex., Dallas—DWELLINGS—Moody & Tips, 701 Forest Ave., 100 low priced dwellings, on 400 acre site, Illinois, Morrell, M.K.T. Ry. Owner builds. Approx. $575,000. CD 3/3.

Tex., Fort Worth—HOUSING—O'Neal & Foster, 5000 James Ave., low cost housing. Owner builds. Approx. $275,000. CD 12/23.

Tex., Fort Worth—DWELLINGS—Taylor-Todd Corp., 1st. Natl. Bank Bldg., 162 brick veneer dwellings, near Mitchell Blvd., own forces. Approx. $985,400. CD 11/9.

Tex., Garland—DWELLINGS—Nathan L. Jones, c/o George Barnett, 614 State St., 25 dwellings. Owner builds. $265,000. CD 1/3.

Tex., Houston—DWELLINGS—J. P. Boone, 4320 Alief Rd., 24 dwellings in Oak Estates. Owner builds. Approx. $455,000. CD 12/23.

OSGOOD

Air cushion clutch wins praise from Industrial Silica Corporation

"Our experience with Osgood Air-Cushion Clutches has been most satisfactory; operators are well pleased with them, and maintenance has been practically nil," writes the operating Vice President of Industrial Silica Corporation, Youngstown, Ohio. The Buckeye firm has had three Osgood shovels with Air-Cushion Clutches in continuous use since they were purchased about 20 months ago.

Look at the typical operation shown above. Here's work that requires maximum ability to absorb shocks, and places a premium on fast, uninterrupted production. The Osgood Air-Cushion Clutch, with air control, completely eliminates jerking and grabbing . . . provides fast, velvet-smooth action that permits accurate control of loads at all times and reduces wear on both men and machines. Trouble-free clutch has only one moving part . . . greatest advancement in power shovel design in 25 years. Be sure to see Osgood before you buy.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. O-G THE GENERAL CO.
EXCAVATOR
MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅛ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

"Gunite" . . . . . the sand-cement product of the "CEMENT GUN," for Concrete and Masonry Repairs, Pre-Stressed Tanks, Steel Encasement and for lining Reservoirs, Sewers and Tunnels.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE "CEMENT GUN"

PITTSBURGH
·DES MOINES

ELEVATED
STEEL BINS

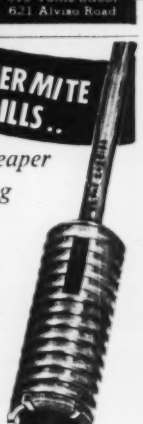
For the economical and efficient storage of any free-flowing dry material —built in types and sizes suited to your particular need. *Let us consult with you.*

PITTSBURGH · DES MOINES
STEEL COMPANY

Pittsburgh, Pa. 3414 Neville Island
Des Moines, Ia. 915 Tuttle Street
Santa Clara, Cal. 621 Alviso Road

CONCRETE TERMITE
Rotary DRILLS..

. . . for faster, cheaper and quieter drilling



SAVE TIME and MONEY on every job! TERMITES hold their gauge—bore hundreds of holes clean, true and fast. Pulverizing action eliminates ear-shattering noise and permits drilling close to edge of concrete members without breakage. TERMITES fit any ½-inch electric drill. Three styles handle all drilling in masonry, concrete, tile or brick.

ORDER TODAY
. . . from your dealer or write direct.

"the drill that gives you more holes per dollar"

Manufactured exclusively by

CONCRETE TERMITE DRILL CO.
2086 Foothill Boulevard
PASADENA 8, CALIFORNIA

Tex., Houston—DWELLINGS—J. P. Boone, 4320 Alief Rd., 16 dwellings, Childress St. Owner builds. $250,000. CD 12/23.

Tex., Houston—DWELLINGS—C. B. Faulkner, 12780 Market St. Rd., 25 dwellings. Owner builds. Approx. $250,000. CD 1/3.

Tex., Houston—DWELLINGS—L. E. Helms Lumber Co., 5214 Airline St., 100 dwellings, off Old Richmond Rd. Owner builds. $700,000. CD 12/1.

▲ Tex., Houston—DWELLINGS—MacGregor Park Homes, Inc., c/o J. J. Leicher, 2402 Arbor St., 214 dwellings, Sect. 3, 1st Sect. MacGregor Pl. Sub-division, own forces. $1,498,000. CD 12/20.

Tex., Houston—DWELLINGS—Security Lumber Co., 7106 Long Dr., 53 dwellings, near Port Arthur-Houston proposed Hy. Owner builds. $375,000. CD 12/23.

Tex., Houston—DWELLINGS—Security Lumber Co., 7106 Long Dr., 22 dwellings, day labor. Approx. $250,000. CD 12/23.

Tex., Houston—DWELLINGS—Raleigh A. Smith & Sons, 6409 Paine St., 88 dwellings, Airline Dr. Owner builds. $700,000. CD 12/29.

Tex., Houston—DWELLINGS—The Sunshine Homes Lumber & Building Co., 10122 Hardy St., 30 dwellings. Owner builds. Approx. $250,000. CD 1/3.

Tex., Mission—DWELLINGS—Highland Park Homes, Inc., Mission, 50 dwellings. Owner builds. Approx. $375,000. CD 12/23.

Tex., Rankin—HOUSING—Morris S. Ware, 1401 N. Whitaker St., Midland, 49 unit housing, own forces. Approx. $315,000. CD 12/21.

Tex., San Antonio—DWELLINGS—O'Neal, Foster & Blair, 2047 E. Houston St., 75 low-priced dwellings. Owner builds. Approx. $250,000. CD 1/3.

Tex., Sherman—ACADEMY—St. Joseph's Academy, Sherman, 2 story, 87x106 ft. structural steel masonry academy bldg., concrete pier and beam fdn., day labor. $263,000. Est. $250,000. Bids 9/19. CD 9/14.

Tex., Vidor—HOUSING—Chessher Lumber Co., Vidor, low cost housing, Purchase and Hire. Approx. $300,000. CD 1/3.

▲ Alaska, Fairbanks—APARTMENT—Reed & Martin, Inc., et al, Fairbanks, 8 story McKinley Manor Apartment, day labor. $2,500,000. CD 12/29.

Ont., Toronto—OFFICE—London & Lancashire Guarantee & Accident Co. of Canada, Ltd., 61 Acelaide St. E., 5 story, 55x100 ft., rein.-con., structural steel, brick, cut stone office, 61 Adelaide St. E., to Carter Constr. Co., Ltd., 419 Cherry St. Margison & Babcock, 119 Isabella St., engrs.

Que., Lachine—CLUBHOUSE—Summerlea Golf Club, Inc., Dr. L. Kent, pres., 994 Notre Dame St., Lachine, 2 story, part bsmt., 40x200 ft., structural steel, stone, stucco clubhouse, to L. Gordon Tarlton Ltd., 912 McEachran St., Montreal, Approx. $250,000. J. C. Meadowcroft, 1154 Beaver Hall Sq., Montreal, archt.

INDUSTRIAL BUILDINGS

BIDS ASKED

Neb., Stromburg — SERVICE, etc. — B.A. 1/18 — Polk County Rural Public Power Dist., Stromsburg, service and shop bldg. with offices in connection for rural distr. sys. $74,000. James Loftus, Omaha Natl. Bank Bldg., Omaha, archt. CD 9/14, under LB.

Conn., Naugatuck — PLANT—Bids Asked — Peter Paul Candy Co., Main St., 1 story, 80x89 ft., brick, concrete printing plant, New Haven Rd. $68,000. Henry T. Moeckel, 35 Hillcrest Ave., archt.

Fla., Mineola—PLANT—Bids Asked—Seaboard Airline R.R., W. D. Simpson, ch. engr., S. A. L. R.R. Bldg., Norfolk 10, Va., wood, steel, citrus packing plant, $250,000.

N. J., Delair—PLANT—Bids Asked—Kleckhefer Container Co., 130 N. Broadway, Camden, (selected list of bidders), mfg. plant, Approx. $68,000. S. B. Clark, c/o owner, co. engr.

Wis., Stoughton—WAREHOUSE—Bids Asked—Milprint, Inc., 431 W. Florida St., Milwaukee, Zone 4, 1 story, steel, concrete block warehouse, concrete fdn. and floor. V. K. Boynton, 611 N. Broadway, Milwaukee, Zone 2, engr.

SOON LETS CONTRACT

Ky., Bowling Green—PLANT—Union Underwear Co., Bowling Green, soon lets contract 2 story, 100x360 ft. rein.-con., brick warehouse, $250,000. CD 11/17.

Okla., Oklahoma City—WAREHOUSE—Parr & Aderhold, archts., Hales Bldg., Zone 2, soon lets contract 160,000 sq. ft. grocery warehouse, N. E. 36 and Lincoln Sts., for Safeway Stores, 4 and Jackson Sts., Oakland, Calif., $450,000. CD 9/30.

Va., Richmond—WAREHOUSE—Overnite Transportation Co., 712 Hull St., soon lets contract 2 story, brick warehouse and office on Mays Island, $225,000. H. Carl Messerschmidt, Mutual Bldg., archt.

LOW BIDDERS

Tex., Fort Worth—WAREHOUSE—T. E. Mercer Distributing Co., 600 E. 5 St., Dec. 28, masonry, metal type concrete slab fdn. warehouse, from Paschall-Sanders, 3602 Linden St., $92,930. CD 12/27.

Tex., Houston—PLANT—Foremost Dairies, Inc., 1706 Washington St., rejected bids Dec. 2, masonry, steel dairy plant. LB. $218,000. CD 11/29.

CONTRACTS AWARDED

Ala., Birmingham—PLANT—Virginia Steel Co., c/o contractor, plant addn., to Brice Building Co., 130 S. 13 St., Approx. $150,000.

Calif., San Francisco—WAREHOUSE, etc.—E. Renee Leroy & Pine & Co., 1 Sansome St., warehouse and office, to Russell A. Cullen, 478 Jackson St., Approx. $89,000. Ward & Bolles, 360 Pine St., archts. Clarence Seage, 681 Market St., engr.

Calif., San Francisco—WAREHOUSE, etc.—Leslie Salt Co., 3100 Sansome St., San Francisco, warehouse and office, to Indenco, 656 31 St., Oakland. Approx. $153,500. T. H. Peterson, 656 31 St., Oakland, engr.

Fla., Auburndale—WAREHOUSE, etc.—McDonald, Auburndale, warehouse and feed mill, incl. machinery, to Albert C. Haworth, 1103 Eva St., Tampa, Approx. $300,000.

Fla., Jacksonville—WAREHOUSE, etc.—Jacksonville Meat Market, 1051 Broad St., Zone 2, warehouse and super market addn., paving addnl. park and loading space, to East Coast Constr. Co., 1032 Hendricks Ave., Zone 7, $150,000. J. F. Hallenbeck, c/o contractor, archt.

Ill., Chicago—FACTORY—General Paint & Varnish Co., 2023 N. Mende St., Zone 14, 6,000 sq. ft., steel, brick, concrete factory, to A. E. Anderson, 1244 E. 79 St., Zone 19, $68,000. Kocher, Buss & DeKreek, 7109 S. Stony Island, Zone 19, archts.

Ill., Chicago—TRUCK TERMINAL—Midstates Terminal, 5700 S. Pulaski St., Zone 32, 75x420 ft., steel concrete trunk terminal with offices, to Campbell Lowrie & Lautermilch, 400 W. Madison St., Zone 6, $250,000. W. Scott Armstrong, 109 N. Dearborn St., Zone 2, archt. CD 10/19.

Ill., Chicago—PLANT—Pure Carbonic, Inc., 1805 S. Stewart St., Zone 16, 2 story, 10,000 sq. ft., brick, steel industrial plant addn., to Abell-Howe Co., 53 W. Jackson St., Zone 4, $80,000. R. D. Dwight, 208 S. LaSalle St., Zone 4, archt.

Ill., Chicago—PLANT—Rayner Lithographing Co., 2801 W. 47 St., Zone 32, printing and lithographing company alterations, to Welso Constr. Co., 2345 S. Pulaski St., Zone 23. Approx. $200,000. Awarded 12/23. A. Epstein & Sons, 2011 W. Pershing St., Zone 9, archts.

Ill., Chicago—FACTORY—Walgreen Co., 6122 N. Clark St., factory, to J. Emil Anderson & Son, 1809 Balmoral St., Zone 40, $250,000. Bids 11/5, awarded 12/23. CD 10/28.

Ill., Deerfield—FACTORY—H-D Electric Co., Osterman Ave. and Soo Line R.R., 80x140 ft., brick, concrete factory, to Camm Constr. Co., Wheeling, $68,000. Awarded 12/15. Krol & Hastrup, 542 S. Dearborn St., Chicago, Zone 5, engrs.

Ill., Evanston—FACTORY—Universal Trailor Co., Grey Ave. and Lee St., 32,000 sq. ft., crane type factory addn., to General Contractors, 5621 N. Glenwood St., Chicago, Zone 40, $250,000. Awarded 12/13. Robert P. Johnson, 946 Hayes Ave., Oak Park, archt.

▲ Ill., North Chicago — LABORATORY, etc. — Abbott Laboratories Inc., Sheridan Rd., 5 story, bsmnt., 270,000 sq. ft., concrete, brick pharmaceutical laboratory and warehouse, to John Griffiths & Son Co., 228 N. LaSalle St., Chicago, Zone 1, $1,800,000. Bids 12/21, awarded 12/21. CD 11/29.

Md., Baltimore—WAREHOUSE, etc.—J. I. Case Co., 1823-29 Washington Blvd., 1 and 2 story, concrete, structural steel, masonry, warehouse and office, to Consolidated Eng. Co., 20 E. Franklin St., Zone 2, $167,000.

Md., Westminster — PLANT — Koontz Creamery, 5600 Reistertown Rd., Baltimore, 1 and 2 story, 28x110 ft., concrete, brick, steel, creamery-by-products plant addn., to Edgar Armacost, Westminster $75,000. Carl Walter Koes, 119 Clarendon Ave., Pikesville, archt.

Minn., St. Paul—FACTORY—Waldorf Paper Co., 2260 Wabash Ave., general contract 1 story, 195x202 ft., concrete block, brick, metal factory addn., to J. S. Sweitzer & Son, 739 Pillsbury Ave., $125,000.

Mont., Billings—PLANT—Montana Power Co., Billings, design and construction steam electric plant incl. 66,000 kw. electric generating station, semi-outdoor type unit, stack 200 ft. high, boiler, steam electric turbo generator, to Ebasco Services Inc., 2 Rector St., New York, N. Y., Approx. $200,000.

Neb., Omaha—WAREHOUSE—Maker Mfg. Co., 817 Douglas St., warehouse, 20 and Nicholas Sts., to Shleton & Son, 2009 N. 67 Ave. $120,000. E. J. Sessinghaus, Baum Bldg., archt.

O., Akron—SALES and SERVICE CENTER—Conart Motor Sales, Inc., 457 E. Market St., 67x310 ft., sales and service center on 2½ acre tract on E. Market St., between postoffice and library, to Williams & Snyder Constr. Co., 109 N. Union St. Approx. $200,000. Beiswenger & Hoch, 1659 W. Market St., consult. engrs. CD 10/28.

▲ O., Cincinnati—FACTORY—Ford Motor Co., 300 Schaefer St., Dearborn, Mich., 1 and 2 story, no bsmnt., 520x800 ft., brick factory, office bldg., power plant, incl. parking area, railroad siding, on approx. 58 acres, to Darin & Armstrong, 2041 Fenkel Ave., Detroit, Mich., Approx. $3,000,000. CD 12/1.

▲ O., Cleveland—REFINERY—The Standard Oil Co., Midland Bldg., design and construction extensive refinery modernization program, to Bechtel Corp., 220 Bush St., San Francisco, Calif. Est. $4,500,000. CD 11/11.

O., Hamilton—PLANT—American Cyanamid Corp., 30 acid, steel towers, concrete fdn., fans, pumps, cooling coils, sulphur burners, etc., to Chemical Constr. Corp., 350 5 Ave., New York, N. Y. Approx. $450,000. CD 10/13.

Pa., Phila.—GARAGE—William T. Jones & Sons, Inc., 6330 N. Broad St., 80x111 ft. masonry garage, to Wintz Bros., 1618 Sellers St. Approx. $68,000. CD 10/32.

Pa., Sunbury — GENERATING PLANT — Pennsylvania Power & Light Co., Pennsylvania Power & Light Bldg., 9 and Hamilton Sts., Allentown, steam electric generating plant, (3rd unit), to Arthur A. Johnson Corp., 29-28 41 St., Long Island City, N. Y., Approx.

$600,000. Ebasco Services, Inc., 2 Rector St., New York, N. Y., engrs.

Tenn., Lupton City—PLANT—Dixie Mercerizing Co., c/o contractor, 2 story, 50x220 ft. mfg. plant, to Mark K. Wilson Co., Chamberlain Bldg., Chattanooga. Approx. $75,000.

Tenn., Nashville—PLANT—Newspaper Printing Corp., c/o Marr & Holman, archts., Stahlman Bldg., newspaper mechanical bldg., to V. L. Nicholson Co., Nashville Trust Bldg., $519,000. Bids 11/10. CD 11/12, under LB.

Tex., Abilene—REFINERY—Onyx Oil Refinery, Abilene, reconstruct portion refinery, own forces. Approx. $80,000.

Tex., Galveston—WHARF WAREHOUSE STORAGE—Galveston Wharves, 2324 Strand St., 50,000 sq. ft. wharf warehouse storage, force account. Approx. $290,000. CD 12/23.

Tex., Houston — SUBSTATION — Houston Lighting & Power Co., 1016 Walker St., substation and 3,000 ft. submarine power cable, Manchester area, force account. $475,000. CD 9/10/47.

Tex., Houston—WAREHOUSE—Rosson-Richards Co., 2812 University Blvd., warehouse, to Metallic Building Co., 4601 Holmes Rd. Approx. $78,000.

Tex., Laredo — WAREHOUSE — Texas-Mexican Ry. Co., Laredo, addnl. currugated iron, concrete warehouse, farce account. Approx. $75,000. Est. $70,000. CD 10/4.

Tex., Port Neches—PLANT—B. F. Goodrich Chemical Co., Port Neches, plant expans. for mfg. cold rubber synthetics, to James Stewart Co., Port Lavaca, $245,000. Bids 10/1. CD 9/14.

Tex., Quanah—PLANT—Quanah Cotton Oil Co., Quanah, cotton gin plant, own forces. Approx. $75,000.

▶ **Tex., Sweetwater**—PLANT—United States Gypsum Co., Sweetwater, plant expansion, force account. $1,000,000.

W. Va., Beckley—PLANT—The Beckley Newspapers Corp., c/o contractor, 5 story printing plant addn., to Vipperman Constr. Co., Beckley.

Wis., Kenosha—FACTORY—Tri-Clover Machine Co., 2908 60 St., 1 story, 50x258 ft., steel, concrete block factory addn., concrete fdn. and floor, to Jos. Giebeler, W. 60 St. Kenosha.

Wis., Two Rivers—FACTORY—Hamilton Mfg. Co., 3116 18 St., 4 story, 102x166 ft., steel, brick factory addn., concrete fdn., to Immel Constr. Co., 560 Main St., Fond du Lac. Approx. $200,000. CD 11/29.

B. C., Port Edward—MILL WALLS, etc.—Port Edward Cellulose Co., Ltd., Port Edward, supply precast walls and roof of pulp mill, Creaghan & Archibald, Ltd., 1440 St. Catherine St. W., Montreal, Que., Approx. $400,000. Stadler, Hunter & Co., 1117 St. Catherine St. W., Montreal, Que., engrs. CD 3/20/47.

Ont., Oshawa—FACTORY—Skinner Co., Ltd., Simcoe St., 1 story, part 2 story, 60x400 ft., steel plant addn., to H. M. Brooks, Ltd., 473 Masson St. Approx. $200,000. Bids 12/9. CD 12/6.

Ont., Toronto—PRINTING PLANT—Salvation Army, 471 Jarvis St., Toronto, 1 story, mezzanine, brick, cinder block, structural steel printing plant, to Bradford-Hoskal Ltd., 1170 Yonge St., Approx. $80,000. Bids 12/5. CD 11/30.

Ont., Welland — FACTORY — North American Cyanamid Ltd., 1 Fourth Ave., Niagara Falls, remodeling present factory for pilot plant for experimental purposes, to Frontier Eng. & Mfg. Ltd., 399 Buttrey St., Niagara Falls, Approx. $100,000.

UNCLASSIFIED

BIDS ASKED

Fla., Jacksonville—SWIMMING POOL, etc.—B.A. 1/19—City Recreation Dpt., concrete swimming pool, locker rooms, showers and other modern control equip. for for colored people at Jefferson and 4 Sts. $140,000. Marsh & Saxelby Hildebrandt Bldg., Zone 1, archts. CD 1/12/45.

La., St. Martinsville—SWIMMING POOL—B.A. 1/18—State Dpt. P. Wks., State Capitol, Baton Rouge, swimming and wading pool at Longfellow-Evangeline State Park. CD 10/25/45.

South Dakota and Nebraska—RURAL DISTRIBUTION LINES—B.A. 1/18—Cherry-Todd Electric Co-operative, Valentine, 540 mi. rural distr. lines, Todd and Mellette Counties, S. D. and Cherry Co., Neb. $500,000. D. O. Fiahart, Rapid City, S. D., engr. CD 5/16.

✦ **California**—STEEL TOWERS—B.A. 1/22—Bureau Reclamation, Dpt. Interior, Elverta, 279 double circuit steel towers for 56 mile section 230 kv west side transmission line between Cottonwood and Arios, Central Valley Proj., Shasta Co.

Calif., Fresno—SWIMMING POOL, etc.—B.A. 1/26—Y. M. C. A., N. and Tuolumne Sts., rein.-con., brick, swimming pool, locker rooms, and game rooms addns. Approx. $50,000. Plans deposit $25. H. Rafael Lake & Elso B. Di Luck, 408 Patterson Bldg., archts. CD 3/11.

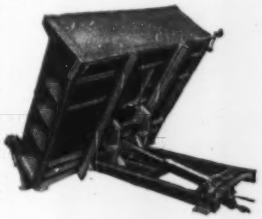
▲✦ **Oklahoma**—RAILROAD RELOCATION—B.A. 1/28—U. S. Eng., Box 61, Tulsa, relocating Kansas, Oklahoma and Gulf Railway in Fort Gibson Reservoir, Inv. No. CIVENG-34-066-50-86. $1,200,000. Extended date. CD 1/4.

✦ **Me., Winter Harbor**—ELECTRICAL POWER FACILITY BLDG.—B.A. 2/1—At office Officer-in-Charge of Constr., First Naval Dist. Headquarters, 495 Summer St., Boston, Mass., 27x27 ft., stone, masonry Auxiliary Electrical Power Facility Bldg. addn., alterations, install three 75 kw. diesel generators, Spec. 23494. Plans deposit $10.

"I BOUGHT ANTHONY DUMP BODIES — —THEY COST ME LESS"

Contractors everywhere are buying where they can do the best. As one contractor recently remarked:

"After weighing all of today's factors of price, quality, and performance I bought Anthony Dump Bodies and Hoists . . . they cost me less."



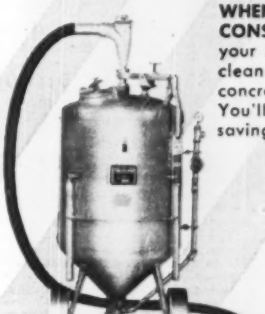
For prices on equipment to meet your specifications it will pay you to call your Anthony distributor. Quick delivery from stock. Write for name of your distributor.

ANTHONY CO, Streator, Ill.

ANTHONY

NON-STOP PROFITS

PUT A *SANSTORM* ON THE JOB



Your sandblasting headaches end **WHEN SANSTORM GOES ON YOUR CONSTRUCTION JOB!** Fast and easy, your Sanstorm Sandblast Machine will clean every kind of steel fabrication, concrete, brick, stucco and equipment. You'll say it's the greatest money-saving piece of machinery on your job.

CHECK THESE FEATURES

✔ **JOB EFFICIENCY.** No wonder Sanstorm is the leader because no matter what abrasive you use, it won't plug.

✔ **JOB ECONOMY.** Simply designed, Sanstorm machines are built for rugged working conditions, yet always maintain a constant, precision flow.

✔ **SIZES FOR EVERY BLAST CLEANING NEED.** Sanstorm Sandblasting machines are available in stationary or portable models. Simply operated, too, for real labor savings.

Dealers in all principal cities.
For further information write or wire:

Charles L. Spears,
SANSTORM MANUFACTURING CO.
Santa Clara and H Streets Fresno, California

Georgia—RURAL DISTRIBUTION LINES—B.A. 2/7—Flint Electric Membership Corp., Reynolds, 15.8 mi. rural distr. lines, one substation and one breaker station, Taylor Co. Plans deposit $25. Southern Eng. Co., 699 Spring St. N.W., Atlanta, engrs. CD 4/21.

▲ **Wyo., Laramie**—FIELD HOUSE; etc.—B.A. 2/8—Bd. Trustees University of Wyoming, Laramie, field house and stadium, $1,500,000. Porter & Bradley & Goodrich & Wilking, Caster, archts.

† **Ill., Hines**—POOL—B.A. 2/14—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C. therapeutic pool for paraplegics between South Wings of Bldgs 126 and 127, Veterans Administration Hospital, Spec. 5003, Proj. 7-4203.

Ill., Chicago—PARK—Bids Asked—Chicago Park Dist., 425 E. 14 St., Zone 5, park, grading, drainage, water sys., installation sewage, lighting, equipping fixed facilities, Damen and 59 Sts. $75,000. CD 6/11/45.

SOON LETS CONTRACT

N. C., Valdese—DYE HOUSE—Biberstein & Bowles, archts., 1600 Elizabeth Ave., Charlotte, soon lets contract dye house for Valdese Mfg. Co., Valdese.

LOW BIDDERS

Arizona—TUNNEL—State Hy. Dpt., Phoenix, 1,240 ft. tunnel, 40 ft. wide, 23 ft. high on new alignment U. S. 66, Pinal Co., from Fisher Contg. Co., S 16 St., Phoenix, $579,078. W. C. Lefebvre, hy. engr.

Calif., Agnew—ELECTRICAL DISTRIBUTION SYSTEM—State Div. Architecture, P. Wks. Bldg., Sacramento, Dec. 28, electrical distr. sys. at Agnews State Hospital, from Malm & Welter Elec. Contg. Co., 60 Stockton Ave., San Jose, $51,903. CD 12/5.

Colorado—RURAL DISTRIBUTION LINES—Southeast Colorado Power Assoc., La Junta, 263.89 mi. rural distr. lines (Colorado 17 N and T Prowers, El Paso, Pueblo, Lincoln, Crowley and Otero Counties, from J. R. Foree, 302 Natl. Bank of Topeka, Topeka, Kan., $264,227, Flora Eng. Co., 1717 E. Colfax Ave., Denver, archt. and engr. CD 9/13.

Kansas—RURAL DISTRIBUTION LINES—Minescah Rural Electric Co-operative, Pratt, Dec. 16, rural distr. lines, Pratt Co., etc., 304 mi. North Section, from Jacobs & Doyle, Edgewood, Ia., $359,735; 328 mi. South Section, from A. D. Reis, National Bank of Topeka Bldg., Topeka, $342,754. CD 4/28.

Louisiana—RURAL DISTRIBUTION LINES—Louisiana Rural Electric Co-operative, Alexandria, rejected bids Dec. 13, 120 mi. rural distr. lines, Rapides, Avoyelles, Evangeline, St. Landry and Grant Parishes. L. B. $171,148. CD 12/20.

† **Montana**—TRANSFORMER, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Dec. 22, Schedule 1, one 20,000 kva transformer with three 115,000 volt and three 34,500 volt lightning arresters, for Shelby Substation, Fort Peck Proj., Spec. 2837, from Gough Industries, Inc., 827 E. 1 St., Los Angeles, Calif., $65,998. CD 12/14.

N. Y., Napanoch—WALLS—Bureau Contracts & Accounts, Albany, rejected bids Oct. 5, replacing south and east walls, etc. at Institute of Male Defective Delinquents, L. B. $746,055. Will re-advertise. CD 11/1, under LB.

Wash., Seattle—FELINE HOUSE—City Park Dpt., Dec. 28, 1 story, part bsmnt., 35x180 ft., concrete, steel feline house at Woodland Park Zoo, from D. R. Peterson, 15322 Beach Dr. N.E. $307,916, Est. $240,000. CD 12/8.

CONTRACTS AWARDED

Ala., Fairhope—GAS SYSTEM—City, natural gas sys., to L. F. Wilder, 2301 N. 24 St., Birmingham, $594,406. Bids 12/7, awarded 12/30. CD 12/14, under LB.

† **Idaho**—CLEARING RIGHT-OF-WAY—Bonneville Power Admin., Box 3537, Portland 8, Ore., clearing right-of-way for Sandpoint-Bonners Ferry 115 kv transmission line, Bonner and Boundary Counties, Inv. 49195, to James E. White, E. 6712 Sprague St., Spokane, Wash. $81,480. Bids 12/27. CD 12/12.

Ill., Chicago—FIELD HOUSE—Chicago Park Dist., 425 E. 14 St., 2 story, brick, steel, concrete, stone field house and comfort station, Loyola Park, Sheridan Rd. and Greenleaf St., to Coath & Goss, 5103 Lake St., $610,400. Bids 12/8. CD 12/28, under LB.

Ill., Chicago—FIELD HOUSE—Chicago Park Dist., 425 E. 14th St., Zone 5, 2 story, 65x130 ft. field house in West Pullman Park, to Jos. J. Duffy Constr. Co., 4994 Elston St., Zone 30, $564,344. Awarded 12/22. CD 12/1, under LB.

▲ **Ind., Fort Wayne**—COLISEUM—Bd. Comrs. Allen Co., Court House, general contract war memorial coliseum, to Hargerman Constr. Corp., 402 E. Superior St., $1,959,921. Bids 12/14. CD 12/20, under LB.

Ind., Ft. Wayne—INDOOR ROLLER SKATING RINK—Jos. I. and Jas. E. Wall, Lima Rd., 1 story, indoor roller-skating rink, incl. 70x150 ft. skating area at rear, with 45x116 ft. space in front, on 3 acre site east of Lima Rd. on California Rd. Owner builds, $100,000, Robert Swan, 721 Prospect St., archt.

† **Montana**—TRANSMISSION LINE—Bureau Reclamation, Great Falls, 100 mi 115 kilovolt power transmission line between Havre and Shelby in northern Montana, to carry power from Fort Peck Dam, to Smith Constr. Co., 1000 44 Ave., N. Nashville, Tenn., $599,433. Bids 12/6. CD 12/13, under LB.

Nebraska—RURAL DISTRIBUTION LINES—Wheat Belt Electric Membership Assn., Sidney, 31 mi. rural distr. lines, Cheyenne Co., to Griffin Constr. Co., Aurora, $67,459. CD 2/28.

North Dakota—RURAL DISTRIBUTION LINES—Slope Electric Co-operative, New England, 20 mi. high voltage transmission lines and 563 mi. rural distr. lines, Adams, Bowman, Hettinger and Slope Counties, to Line Builders, Inc., Northern Pacific Industrial Site, Billings, Mont., $537,437. Bids 10/18. CD 11/2, under LB.

S. C., Greenville—MOTOR COURT—Colonial Court Hotel, c/o contractor, motor court to Bailey & Brayell Constr. Co., Greenville. Approx. $200,000.

Tex., Denison—LIGHTING SYSTEM—Texas Power & Light Co., Denison, White-Way lighting sys., force account. Approx. $75,000.

Tenn., Chattanooga—SWIMMING POOLS—State, Div. State Parks, State Office Bldg., Nashville, swimming pools at Washington and Harrison Bay Parks, own forces. Bids 12/14 rejected, L. B. $118,867. CD 12/21, under LB.

Tex., Houston—DRIVE-IN THEATER—Claude Ezell & Assoc., 2031 Jackson St., Dallas, 800 auto capacity drive-in theater, to Tom Former & Son Constr. Co., 2009½ Jackson St., Dallas. Approx. $250,000. CD 12/20.

Tex., Houston—STADIUM—Rice Institute, M. Esperson Bldg., 20,000 seating expansion of athletic stadium (now under constr.) to Brown & Root, Inc., Box 3, $400,000. Lloyd & Morgan, 4605 Montrose Blvd., archts. W. P. Moore, 4605 Montrose Blvd., engr.

† **Wash., Arlington**—TRANSMITTER BLDG.—Yards & Docks, Annex, Navy Dpt., Arlington, Va., 152x165 ft., rein.-con. transmitter bldg. at Jim Creek Naval Communication Station, Specs. 21922, to Construction Engineers & Contractors, Inc., 801 Port of Tacoma Rd., Tacoma, $999,735. Bids 12/9, awarded 1/4. CD 12/14, under LB.

B. C., Alert Bay—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf, to Pacific Pile Driving Co., Ltd., 1125 Blanchard St., Victoria, Approx. $65,151. Bids 12/21. CD 12/6.

Man., Winnipeg—ELECTRICAL SYSTEM—Government of Canada, Ottawa, Ont., complete renewal electrical sys. of Minto Street Armory, to Kummen-Shipman Electric Ltd., 270 Fort St., Approx. $50,000. CD 11/8/43.

N. S., Pictou—CRANE FOUNDATION—Government of Canada, Hunter Bldg., Ottawa, Ont., foundation for crane to be erected on seawall to Pictou Foundry & Machine Co., Ltd., Pictou, $65,000.

Ont., Kitchener—PARK DEVELOPMENT—Municipality, addnl. park development at Victoria Park, own forces, $52,000.

Ont., Niagara Falls—GOLF COURSE—Niagara Parks Comn., Niagara Falls, golf course at Whirlpool, to Robertson Constr. & Eng. Co., Ltd., 512 Clifton Ave., $69,938. N. Mann, 1995 Franklin Ave., engr.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ill., Chicago**—City, City Hall, Oscar E. Hewitt, comr. P. Wks., water filtration plant in Harbor of Chicago, 500 ft. off shore, 150 ft. north of Navy Pier, on 61 acres of made land, $78,000,000. Alvord, Burdick & Howson, 20 N. Wacker Drive., Zone 6, consult. engrs. CD 5/16.

N. M., Lovington—City, City Hall, voted bonds, water and sewer extens. $325,000. H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, archts.

▲ **Tex., Port Arthur**—City, voted bonds, water treatment plant, $2,400,000; c.i. waterlines, $581,000. Freese, Nichols & Turner, 2111 National Standard Bldg., Houston consult. engrs.

Que., Jonquiere—Village, P. E. Fortin, secy., WW imprvs. Approx. $752,920.

▲ **Que., Ville Jacques Cartier**—Municipality, WW and sewerage sys., $2,000,000. J. A. Lalonde & Co., 953 Dunlas Ave., Outremont, engrs.

SEWERS, WASTE DISPOSAL

Calif., Santa Rosa—City, City Hall, $350,000 bond election Jan. 24, sewage treatment plant, $800,000. Brown, Caldwell & Hyde, 233 Sansome St., San Francisco, consult. engrs. Frank B. Sarles, City Hall, city engr. CD 12/11/45.

Ia., Grinnell—City, City Hall, sewage plant, $200,000. Stanley Eng. Co., Hershey Bldg., Muscatine, engr.

R. I., Woonsocket—City, P. Wks., City Hall, brick, concrete incinerator. $250,000.

S. C., Greenville—City, voted bonds, sanitary sewer imprvs. $500,000. CD 12/9.

▲ **Tex., Corpus Christi**—City, voted bonds, storm sewers, $1,400,000; sanitary sewers, $310,000; sewage disposal plant, $550,000. CD 12/7.

▲ **Tex., Port Arthur**—City, Port Arthur, voted bonds, sanitary sewer collection sys., $825,000; sewage disposal plant, $1,575,000. Freese, Nichols & Turner, 2111 Natl. Standard Bldg., Houston, consult. engrs.

BRIDGES

▲ **Arkansas**—State Hy. Dpt., Little Rock **Baxter Co.**—bridge near site of Bull Shoals Dam, Hy 125, Cotter. $2,750,000. Alfred E. Johnson, Little Rock, engr.

Nebraska—State Dpt. Roads & Irrigation, Lincoln, **Cheyenne Co.**—underpass at U. P. R.R. Co. tracks, Sidney. $700,000. F. H. Klietsch, c/o owner, state engr.

▲ **North Dakota**—Northern Pacific Ry. Co., B. Blum, ch. engr., 176 E. 5 St., St. Paul, Minn., bridge across Missouri River, near Bismarck. $3,500,000.

Ont., Hamilton—Municipality, road tunnel to mountain. $300,000. W. L. McFaul, city engr.

STREETS AND ROADS

▲ **Idaho**—State Hy. Dpt., Boise, **Bonneville and Butte Counties**—imprv. 8 mi. roads and constr. 32 mi. new road between Idaho Falls and atomic reactor station west of Arco. $1,200,000.

S. C., Greenville—City, voted bonds, street and sidewalk imprvs. $300,000.

Tex., Corpus Christi—City, voted bonds rein.-con. sidewalks curbs, gutters, $100,000; street grading, paving, $500,000. CD 12/7.

Que., Jonquiere—Village, P. E. Fortin, secy., paving various streets, etc., Approx. $882,000. CD 11/10/47.

EARTHWORK, WATERWAYS

Ia., Onawa—Iowa Conservation Comn., 914 Grand St., Des Moines, dredging Blue Lake and constr. channel from West Lake to Blue Lake. $170,000.

AIRPORTS AND AIRBASES

Mont., Bozeman—ADMINISTRATION—Gallatin Field Bd. for Gallatin Co., Bozeman, plans by F. F. Willson, Bozeman, administration bldg. $155,000. CD 6/29.

S. C., Greenville—AIRPORT—City, voted bonds, airport imprvs. $225,000. CD 12/9.

S. D., Hot Springs—AIRPORT—City, airport. $170,000. CD 7/26/45.

S. D., Sioux Falls—AIRPORT—City, City Hall, 9 and Dakota Sts., airport imprvs. $150,000.

▲ **Wash., Moses Lake**—HANGARS—Dpt. Air Force, The Pentagon, Wash., 25, D. C., hangars, shop facilities, permanent office bldgs., etc., at Moses Lake Air Force Base. $12,000,000.

LATIN AMERICA

Peru, Tarma—Republic of Peru, Lima, plans cement plant. Approx. $500,000.

PUBLIC BUILDINGS

▲ **Ark., Ft. Smith**—HOSPITAL—Sparks Memorial Hospital, Ft. Smith, plans by E. Chester Nelson, Merchants Bank Bldg., 150-bed hospital. $1,500,000. CD 5/19.

▲ **Ark., Little Rock**—MEDICAL CENTER—University of Arkansas, Medical School, MacArthur Park, Little Rock, plans by Erhart, Eichenbaum & Rauch, Wallace Bldg., medical center, $6,200,000. CD 7/31/47.

▲ **Ark., Pine Bluff**—HOUSING—City, 2 housing, incl. 500 units, $4,000,000.

▲ **Conn., Hartford**—HOUSING—City, Hartford Housing Auth., 846 Asylum Ave., plans by Kane & Fairchild, 49 Pearl St., 460 2 story, bsmnt., family housing units, Albany Ave. $4,500,000. CD 10/18.

Conn., Manchester—SCHOOL—Town, Bd. Educ., Manchester, plans by Kane & Fairchild, 49 Pearl St., Hartford, and Arnold Lawrence, 19 Bliss St., Manchester, 2 story, bsmnt., brick, steel school, Hollister St. $250,000. CD 3/29.

Idaho, Idaho Falls—AUDITORIUM—City, City Hall, voted bonds, municipal auditorium, $550,000. CD 10/28.

Idaho, Nampa—HOUSING—Nampa Housing Auth., Nampa, plans by C. T. Miller, 807 4 Ave., Seattle 4, Wash., 75 unit housing. $500,000. CD 10/19/45.

▲ **Ill., Chicago**—SANITARIUM—City, City Hall, Zone 2, plans by Paul F. Gerhardt, city archt., sanitarium, tuberculosis alterations, modernization. $1,250,000. CD 4/11/45.

Ia., Cedar Rapids—PARKING RAMP—City, City Hall, parking ramp bldg. $500,000. H. R. Green Co., 417 1 Ave., S. E., Cedar Rapids, archt.-engr.

▲ **Kan., Manhattan**—SCHOOLS—Bd. Educ. plans by F. O. Wolfenbarger, & Assoc., Ulrich Bldg., Manhattan, high school, elementary school and 2 elementary school addns. $2,000,000.

Kan., Washington—HOSPITAL—Washington Co., Washington, plans by F. O. Wolfenbarger & Assoc., Ulrich Bldg., Manhattan, hospital. $260,000.

Ky., Louisville—FIELD HOUSE etc.—Masonic Widows & Orphans Home, Frankfort Ave., plans by Leslie V. Abbott, 2323 S. Brooke St., field house and auditorium. $350,000.

Md., Baltimore—SCHOOL—Bd. Educ. Baltimore Co., Susquehanna and Washington Aves., Towson, Zone 4, plans by Tyler, Kutcham & Myers, 513 Park Ave., brick, stone, steel, concrete school, Westowne off Edmonson Ave. near here. $500,000.

▲ **Md., Baltimore**—COURT—City of Baltimore, Bureau Bldg. Constr., 410 Municipal Bldg., 3 story, subbsmnt., 86x150 ft., limestone, steel, concrete peoples court bldg. $2,500,000. Whitmen, Requardt & Assoc., 1304 St. Paul St., mech. engrs. Faisant & Kocken, 2017 Maryland Ave., structural engrs. R. E. L. Williams, 410 Municipal Bldg., city engr. CD 10/6.

Md., Baltimore—HOSPITAL, etc.—State Dpt. P. Imprvs., 506 Park Ave., plans by Buckler, Fenhagen, Meyer & Ayers, Federal Land Bank Bldg., 25 and St. Paul St., Zone 8, 6 story, irregular shaped, brick, concrete, steel hospital and shop on grounds of Maryland Penitentiary. $775,000. John B. Funk, 506 Park Ave., ch. engr.

▲ **Md., Mt. Wilson**—HOSPITAL—State Dpt. Pub. Imprvs., 506 Park Ave., Baltimore, plans by Buckler, Fenhagen, Meyer & Ayers, Federal Land Bank Bldg., Baltimore, Zone 18, 6 and 8 story, brick, concrete, steel hospital on grounds of Mt. Wilson State T. B. Hospital, $4,000,000. Chas. E. Daniels, Federal Land Bank Bldg., Baltimore, Zone 18, mech. engr. Sandlass, Wieman & Assoc., 1201 N. Calvert St., Baltimore, Zone 2, structural engrs., John B. Funk, ch. engr. State of Md., 506 Park Ave., Baltimore, engr.

Mass., Pocasset—SANATORIUM—Comrs., Barnstable Co., Wm. J. Lockhart, chn. Bd. Trustees, Pocasset, plans by Harold E. Mason, 53 Merriam Ave., Leominster, 2 wings, nurses and helpers quarters, heating plant sanatorium addns., imprvs. $740,000.

Mass., West Springfield—SCHOOLS—Town, Maurice E. Blew, chn. Bldg. Comn., plans by Ebbetts Frid & Prentice, 862 Asylum Ave., Hartford, Conn., 2 story, bsmnt., brick, steel, Tatham School, approx. $250,000; plans by Bernhard Dirks, Montague, brick, steel, John Ashley School, approx. $250,000.

Minn., Minneota—PLANT—Village, K. P. Kompelien, clk., plans by B. M. Orr Eng. Co., 1004 Marquette Ave., Minneapolis, municipal power plant, furnishing, installing diesel electric generating equip. of three 450 hp. diesel units, auxiliaries. $260,000.

▲ **Mo., St. Louis**—HOUSING—St. Louis Housing Auth., Arthur A. Blumeyer, chn., c/o Civil Courts Bldg., 12 and Market Sts., Zone 1, conversion 47 block, 180-acre slum area into modern community for Negroes, bounded by Jefferson Ave., Cass Ave., 18 St., Franklin Ave. $30,000,000. CD 1/9/46.

Mont., Lewistown—HOME—State, Bd. Examiners, Helena, plans by J. G. Link & Co., 111 N. Montana St., Butte, state home for the aged. $900,000.

Mont., Libby—HOSPITAL—St. Johns Lutheran Hospital Assn., Walter Neils, chn., hospital. Approx. $300,000.

Neb., Omaha—SHOP and SERVICE—Metropolitan Utilities Dist., 18 and Harney Sts., plans by N. R. Brigham, Keeline Bldg., shop and service bldg., 20 and Center Sts. $500,000. CD 8/9.

N. M., Albuquerque—CLASSROOM—University of New Mexico, Albuquerque, plans by Meem, Zehner & Assoc., P. O. Box 628, Santa Fe, 2 story classroom bldg., 40 classrooms, Southwestern architecture. $400,000.

N. M., Portales—HOTEL—City, plans by Shuefer & Merrill, Box 562, Clovis, hotel. $400,000. CD 12/14.

▲ **N. C., Monroe**—HOSPITAL—Bd. Comrs., Union Co., J. Vernon Griffin, Route 1, Wingate, bond election Feb. 14, hospital in Camp Sutton area. $1,000,000.

▲ **N. C., Monroe**—SCHOOLS—Union Co. Bd. Educ., Allen W. Collins, Route 1, chn. Bd., Monroe, bond election Feb. 14, schools, $1,500,000.

Ore., Springfield—SCHOOL—School Dist. 19, Springfield, voted $950,000 bonds, 5-year school construction program, incl. Junior School. $650,000. CD 11/25.

R. I., Scituate—SCHOOL—Town, School Bd., Main St., plans by Howe, Prout & Ekman, 17 Custom House St., Providence, brick, steel school addn., North Scituate. $750,000.

S. D., Huron—AUDITORIUM—Bd. Educ., Huron, voted $550,000 bonds, Dec. 15, civic auditorium. $754,000. Harold Spitznagel, 816 Natl. Bank of South Dakota Bldg., Sioux Falls, archt. CD 11/23.

▲ **Tenn., Lebanon**—HOUSING—Lebanon Housing Auth., Lebanon, 300 housing units. $1,000,000.

▲ **Tenn., Union City**—HOUSING—Union City Housing Auth., Union City, plans by Marr & Holman, Stahlman Bldg., Nashville, 165 housing units. $1,500,000.

Tex., Corpus Christi—CITY HALL—City, voted bonds, city hall. $500,000. CD 12/7.

▲ **Tex., Corpus Christi**—AUDITORIUM, etc.—City, voted bonds, auditorium and convention hall. $1,400,000. CD 12/7.

Tex., Edcouch—SCHOOL—Edcouch-Elsa School Dist. 10, T. F. Brandt, supt., Edcouch, voted bonds, school, concrete slab fdn. and frame. $250,000. R. Newell Waters, Weslaco, archt. CD 11/15.

▲ **Tex., Marshall**—ARMORY—National Guard Armory Bd., c/o Gen. Dallas J. Matthews, dir., Austin, national guard armory, incl. 3 vehicle maintenance bldgs., on 23 acre tract at Caven Park. $1,105,000.

Tex., Sweeney—SCHOOL—Sweeney Independent School Dist., Sweeney, plans by Donald Bartholome & Assoc., 3106 Brazos St., Houston, 15 room school and remodeling existing auditorium. $275,000.

Tex., West Columbia—SCHOOL—West Columbia Independent School Dist., West Columbia, plans by Donald Bartholome & Assoc., 3106 Brazos St., Houston, 18 classroom school, gymnasium, remodeling existing school. $250,000.

W. Va., Parkersburg—SCHOOL—Bd. Educ., Wood Co., Parkersburg, plans by Frampton & Bowers, 414 11 St., Huntington, brick, stone Junior High School, auditorium, gymnasium and cafeteria, South Parkersburg. $320,000.

W. Va., St. Mary's—SCHOOL—Bd. Educ., Pleasant Co., St. Marys, plans by Frampton & Bowers, 414 11 St., Huntington school addn. $250,000.

▲ **Wis., Wausau**—COURTHOUSE—Bd. Supervs., Marathon Co., Courthouse, plans by Childs & Smith, 20 N. Wacker Dr., Chicago, 6, Ill., 3 story, steel, concrete, brick, stone courthouse. $1,500,000.

Ont., Renfrew—POWER PLANT—Town. (The Hydro-Electric Comn.) Renfrew, 3,000 kw power plant. Approx. $500,000. CD 10/15/43, under Unclassified.

Ont., Whitby—HOME—Ontario Co., W. G. Manning, clk., plans by Rounthwaite & Fairfield, 22 Harbord St., Toronto, 160 person home for aged, Approx. $555,000. CD 9/16.

COMMERCIAL BUILDINGS

Ark., Jonesboro—HOSPITAL—St. Bernard's Hospital, Jonesboro, plans by Brueggeman, Swain & Allen, Gazette Bldg., Little Rock, hospital addn. $600,000. CD 8/17.

Calif., Los Gatos—HOUSE, etc.—Sisters of the Holy Name, c/o Minton & Smith, archts., 1045 Sansome St., San Francisco, Novitiate Provincial House and Senior Sisters' Home. $700,000.

Conn., New Haven—HOUSING—Cooper Apartments, Inc., 339 Kimberly Ave., plans by Daniel Weinstein, 320 Ray Rd., 92 frame, brick veneer housing family units, Diamond St. $750,000.

Fla., Orlando—CHURCH—St. James Catholic Church, Orange Ave., plans by Donovan Dean, Orlando, church on or near site of existing church. Approx. $250,000. A. P. Michales, Orlando, consult. engr.

Ill., West St. Louis—CHURCH—St. Patrick's Catholic Parish, Rev. Bernard Pender, pastor, 711 Vogel Pl., concrete, brick stone church. $500,000.

Ky., Louisville—HOTEL—J. Graham Brown, 675 S. 4 St., Brown Hotel, remodeling interior Kentucky Hotel. $350,000.

▲ **Md., Baltimore**—HALL—Johns Hopkins University, Dr. D. W. Bronk, pres., Homewood, Charles and 34 Sts., plans by Buckler, Fenhagen, Meyer & Ayers, Federal Land Bank Bldg., Zone 18, 2 story, bsmnt., steel, brick, limestone, Alfred Jenkins Shriver Lecture Hall, concrete fdn., $1,395,680. Jas. Kellum Smith, c/o McKim, Meade & White, 101 Park Ave., New York, N. Y., and Gilmore Clarke, c/o Clark Rapunano & Holleran, 145 E. 32 St., New York, N. Y., advisory archts., Charles E. Daniel, Federal Land Bank Bldg., Zone 18, mech. and consult. engr. Sandlass & Wieman & Assoc., 1021 N. Calvert St., Zone 2, structural engrs. CD 5/9.

Md., Towson—STORE—Hutzler Bros., Albert D. Hutzler, pres., Howard and Clay Sts., Baltimore, plans by James R. Edmunds, Jr., 130 W. Hamilton St., Baltimore, 1, 2 and 3 story, bsmnt., masonry, glass branch dpt. store, south of Joppa Rd. at Dulaney Valley Rd. Ketchum Gina & Sharp, 227 E. 44 St., New York, N. Y., interior archts. Henry Adams, Inc., 2315 St. Paul St., Baltimore, mech. engr. Crout, Snyder & Crandall, 20 E. Lexington St., Baltimore, structural engr. J. E. Greiner & Co., 1201 St. Paul St., Baltimore, parking and paving engr.

Mich., East Lansing—THEATRE, etc.—Owner, c/o Arnold & Fuger, archts., 510 Madison Bldg., Detroit, masonry, steel, concrete theatre and retail store development. $500,000.

Mo., St. Louis—HOSPITAL—Evangelical Deaconess Hospital, 6150 Oakland Ave., Zone 10, c/o Bd. Directors, brick, concrete, steel, chronic, mental hospital addn. $500,000.

▲ **Neb., Omaha**—APARTMENT—Jackson Heights Corp., 637 Omaha Natl. Bank Bldg., plans by Leo A. Daly Co., 629 Insurance Bldg., apartment. $3,000,000.

▲ **Okla., Oklahoma City**—APARTMENTS—Steve Pennington, Apco Tower Bldg., 200 apartment units and an unnamed number of dwellings, (location 171A between N. W. 16 and N. W. 20) $9,500,000; community shopping center. $500,000. CD 5/2.

Tex., Abilene—OFFICE—Wooten Properties, Inc., Abilene, 4 to 6 story, bsmnt, masonry, concrete office, concrete pier, beam fdn., steel. $550,000.

▲ **Tex., Dallas**—OFFICE—Gibraltar Life Insurance Co. of America, 417 E. Ervay St., plans by Thomas, Jameson & Merrill, 820 N. Harwood St., 10 to 20 story, masonry, steel office, concrete pier and beam fdn., Harwood and Bryan Sts., $2,000,000-$3,500,000.

Tex., Houston—DEFENSE CENTER—Houston Armed Forces Center Corp., c/o Roy W. Leibsle, archt., 372 Almeda Rd., 3 story, 14,000 sq. ft. defense center, for headquarters bldg. Armorview, recreational rooms, 300 acre site on Almeda Rd., $600,000.

Tex., Houston—DWELLINGS—Raleich A. Smith & Sons, 6409 Paine St., 88 cedar shakes, brick veneer dwellings, concrete slab fdns., Sect. 1 near Airline Dr., $700,000; Sect. 2, 32 wood frame dwellings, asbestos siding, concrete slab fdns., off Little York Rd. $250,000.

▲ **Tex., Lubbock**—HOSPITAL, etc.—Lubbock Memorial Hospital, Lubbock, plans by Haynes & Kirby, 19 St. and Dixie Dr., 8 story, bsmnt. hospital, $2,500,000; nurses home, $500,000. CD 1/7/46.

Wis., Milwaukee—APARTMENT—Louis Radin, 4831 W. State St., Zone 8, 8 story apartment. $750,000-$1,000,000.

▲ **Man., Winnipeg**—ARENA, etc.—Greater Winnipeg Co-Operative Sports Society, H. V. West, 12,000 seating capacity arena in west end of city, Ellice Ave., Approx. $1,500,000; 14,000 seating stadium for outdoor sports, Approx. $500,000. CD 1/21.

Ont., London—HOUSES—London Co-operative Homes Assn., Ltd., c/o J. M. Best, 95 Ecumseh Ave., plans by C. H. Gillin, 284 Dundals St., London, 106 houses in area west of here. Approx. $640,000.

Que., Montreal—CLUB—Committee c/o F. Hanley, 1355 Charlevoix St., Montreal, boys club in St. Anne's Ward. $400,000.

INDUSTRIAL BUILDINGS

Calif., San Leandro—FACTORY—Golden Grain Macaroni Co., 982 Bryant St., San Francisco, 1 story, 48,000 sq. ft., concrete factory. $500,000.

▲ **Colo., Pueblo**—MILL—Colorado Fuel & Iron Corp., Pueblo, rail splitting and rerolling mill. $3,000,000.

Fla., Jacksonville—PLANT—Pure Oil Co., Talleyrand Ave., Zone 6, distributing plant addns., imprvs. $200,000.

Mo., St. Louis—TERMINAL—Superior Forwarding Co., Inc., Anthony Altadonna, pres., 1441 S. 10 St., plans by Joe G. Harms, 440 S. Brentwood Blvd., Brentwood, St. Louis, Zone 17, terminal, incl. garage, east of Broadway, between Sidney and St. George Sts. Approx. $100,000. Murer & Smith, 440 S. Brentwood Blvd., Brentwood, St. Louis, Zone 17, structural engrs.

Okla., Vici—GRAIN ELEVATOR—Farmers Co-operative Assn., Vici, grain elevator. $100,000.

Pa., Bedford—FREIGHT TERMINAL—Motor Freight Express Inc., York, 1 story, steel, rein.-con. freight terminal. $100,000. Van Rensselaer Saxe, 100 W. Monument St., Baltimore, Md., Consult. engr.

▲ **Pa., Morrisville** — STEEL MILL — Carnegie-Illinois Steel Co., c/o U. S. Steel, Carnegie Bldg., Pittsburgh, steel mill on 3,800 acre site on Delaware River, Falls Twp. $900,000,000.

▲ **Tex., Baytown**—REFINERY—Humble Oil & Refining Co., Baytown, refinery remodeling and expans. $2,500,000.

Tex., Dallas—SHOP—Beard & Stone Electric Co., Inc., 2101 Bryan St., plans by J. N. McCammon, 505 N. Ervay St., 80,000 sq. ft. masonry sales, service, shop, St. Joseph and Live Oak Sts. $320,000. CD 5/13.

Tex., San Marcos—PLANT—John Clark Industries, San Marcos, reconstruct household equip. and machine dies mfg. plant. $100,000.

▲ **Ont., Toronto**—FACTORY—Thor-Canadian Co., Ltd., 888 Dupont St., home laundry appliances factory, near here. Approx. $2,000,000.

UNCLASSIFIED

Ill., Des Plaines—DRIVE-IN THEATRE—Essaness Theatres Corp., 540 N. Michigan Ave., Chicago, 700 car drive-in motion picture, Miner St. Approx. $100,000.

▲ **Ill., East St. Louis**—PARKING PROJECTS—City, John T. Connors, mayor, City Hall, Main St. and Missouri Ave., three off-street parking projects in downtown section of city. $919,240-$1,388,280.

Iowa—RURAL DISTRIBUTION LINES—Eastern Iowa Light & Power Co-operative, Wilton Junction, rural distr. lines, Muscatine Co. $975,000 loan approved. Stanley Eng. Co., Muscatine, engr.

Kentucky—RURAL DISTRIBUTION LINES—South Kentucky Rural Electric Co-operative Corp., Somerset, 194 mi. rural distr. lines, sys. imprvs., Wayne Co. $990,000.

La., Lake Charles—SWIMMING POOLS—City, City Hall, Legion Field Pool, $95,000; Goosport Pool, $75,000; Negro Pool, $75,000. Dunn & Quinn, 827 Hodges St., consult. engrs. CD 10/10.

Michigan — RURAL DISTRIBUTION LINES — Northern Michigan Electric Co-operative, Boyne City, two 7500 kw steam units and one 100 kw diesel unit, 106 mi. 115 kv line and 229 mi. 44 kv line plus substation, Cheboygan Co., $6,661,000.

Michigan—RURAL DISTRIBUTION LINES—Top-O'Michigan Rural Electric Co-operative, Boyne City, 217 mi. rural distr. line and sys. imprvs., Charlevoix Co. $780,000. CD 3/4.

▲ **Mo., St. Louis**—TRACK REMOVAL—Missouri Pacific R.R. Co., c/o R. P. Hart, ch. engr., 13 and Olive Sts., and City of St. Louis, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, railroad tracks removal on Poplar St. and constr. track to Terminal R.R. Assn's. Elevated line north of Gratiot St., between 7 and 8 Sts. $1,250,000.

▲ **O., Akron**—PARKING RAMP—City, Mayor Charles Slusser, Municipal Bldg., 3 deck parking ramp, Cherry St. with 1,100 car capacity with entrance off S. Howard St. and over the Ohio canal to the lot. $1,250,000.

S. C., Greensville—PARK—City, voted bonds, park imprvs. $120,000. CD 12/9.

Utah—RURAL DISTRIBUTION LINES—Escalante Valley Electric Assoc., Beryl, 95 mi. rural distr. lines and sys. imprvs., Iron Co. $586,000. CD 4/17/47.

Que., Montreal—SWIMMING POOL—Municipality, completion swimming pool in Henri Julian Park. $100,000. D. Beaupre, City Hall, archt. H. A. Gibeau, City Hall, engr. CD 9/13/44.

Que., St. Vincent de Paul—GOLF COURSE—Ridge River Gold and Country Club, 1448 Mountain St., Montreal, plans by Spence & Mathias, 1448 Mountain St., Montreal, golf course on 400 acre site, clubhouse, etc. $400,000.

Newfoundland, St. John's—ARENA—Lions Club Station Com., D. Pinsent, chn., area in King George V Memorial Park. Approx. $350,000.

Proposal Advertisements see pp. 80 & 81

OFFICIAL PROPOSALS

Bids: January 25, 1950 (504)

State Highway Work

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of (1) the Highway Law and special provisions therein for projects financed with federal aid funds, (2) the Canal Law, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, Jan. 25, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
		L. Ketchum, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Oneida		Sperry's Bridge Over Forest-Port Feeder and Approaches	0.06	Asp. Conc. 52'1½" I-Beam	$1,600 Plans $5	$29,310.50
		DISTRICT No. 5				
		C. R. Waters, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Erie	FAC 50-2	Hamburg Turnpike; City of Lackawanna (Smokes Creek Bridge), Proj. U-750(5)	0.01	Widening 54' 5¼" I-Beam	$4,000 Plans $5	$89,000.00
		DISTRICT No. 8				
		J. S. Bixby, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Dutchess	TSP 50-1	Taconic State Parkway Sect. 5, 6, and 7	13.01	Roadside Development	$800 Plans $5	$15,000.00
Dutchess	TSP 50-2	Taconic State Parkway Sect. 5, 6, and 7 and Access Drive, Rt. 82	....	Waterproofing Conc. Pavt.	$600 Plans $5	$10,000.00
Orange	FARC 50-1	Newburgh-Woodbury, S. H. 42 Moodna Bridge-Newburgh	0.36	9" Crm. Conc. Pavt. 44' Wide, 10 Span Alpha 1-Beam 568.83' Alpha—$1,412.84	$35,000 Plans $10	$650,000.00
	FASH 50-1	Pt. 2 and Pt. 2-A Proj. U-359(11)				
	FAC 50-1					
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Highway at Little E. Neck Rd., Babylon, L. I., N. Y.				
Bronx	FABRP 50-1	Bronx River Parkway So. Ext. (Bruckner Blvd. to E. 233d St.) Proj. U-979(7)	4.52	8" Crm. Conc. Pavt. 26'34" Wide=4.36 Mi. Misc. Work=0.16 Mi.	$120,000 Plans $20	$2,065,000.00
Bronx	FGBRP 50-2	Sep. of Grades of the N. Y. C. R. R. (Harlem Div.) With Bronx River Parkway, So. Ext. Proj. UG 979(8)	0.11	Grading and Structures 160' 7" Plate Girder	$52,000 Plans $10	$939,000.00
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, Long Island, New York				
Queens	FAVWE 50-1	Van Wyck Expressway Cont. 6-A, (Archer Ave. to So. Conduit Ave.) Proj. U-1085(9)	2.51	9" Crm. Conc. Pavt. 2@36' Wide=2.20 Mi. Misc. Work=0.31 Mi.	$105,000 Plans $20	$1,798,000.00

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: January 23, 1950 (505)

Alterations and Additions to Control Tower and Equipment Building

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
CONTRACT NA-16

Sealed proposals for alterations and additions to the Control Tower and the Equipment Building at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 11:30 A. M. Monday, January 23, 1950, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, January 12, 1950

Bids: February 28, 1950 (501)

Airport

PHILADELPHIA, PENNA.
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING,
SURVEYS AND ZONING

Sealed Proposals will be received at Room 903 City Hall Annex, until 12:00 o'clock noon, TUESDAY, FEBRUARY 28, 1950, and opened at that time in Room 903 City Hall Annex, Philadelphia, Penna. for

PHILADELPHIA INTERNATIONAL AIRPORT

SCHEDULE "A"—TERMINAL BUILDING

1. Contract No. A 156 SW—General Construction
2. Contract No. A 157 SW—Plumbing
3. Contract No. A 158 SW—Heating, Ventilating and Air-Conditioning
4. Contract No. A 159 SW—Electrical Work
5. Contract No. A 160 SW—Elevator and Electric Dumbwaiters
6. Contract No. A 161 SW—Food Service Equipment
7. Contract No. A 162 SW—Baggage Handling and Pneumatic Tube System
8. Contract No. A 163 SW—Moving Stairways

The work consists of the construction of a three-story terminal building, approximately 1,110 feet by 120 feet, two fingers each approximately 525 feet by 25 feet, boiler house and appurtenant work.

Proposal forms and specifications may be obtained in Room 1101 City Hall Annex. Blue prints of plans may be purchased at bidder's expense directly from the Keystone Blue Paper Co., 51 North 13th Street, Philadelphia 7, Penna.

No bids will be received unless bidder is qualified by the Director of Public Works. The questionnaire form with all questions fully answered must be filed with the Director of Public Works at least one week prior to the date of opening bids.

Each bid must be accompanied by security in form and amount as set forth in proposal form.

THOMAS BUCKLEY, Director

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2879) will be received by Bureau of Reclamation, Ephrata, Washington, February 2, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, concrete lining, and structures, station 1410+00 to station 2030+75, East Low Canal and Weber wasteway, Columbia Basin Project. The work is situated near Moses Lake, Washington. Principal items are approximately: excavation 4,570,000 cu. yds.; furnishing cement and reinforcement bars and placing 17,800 cu. yds. concrete in structures and lining; erecting 385,000 lbs. structural steel in bridges; installing 84,000 lbs. gates and hoists; and other work. The work is divided into 2 schedules. Time allowed for completion will be 530 days. For particulars, address Bureau of Reclamation, Ephrata, Washington; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(499)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2876) will be received by Bureau of Reclamation, Coulee Dam, Washington, January 31, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, structures, and surfacing and construction of Lind Coulee bridge, relocation of county roads vicinity of O'Sullivan Dam, Columbia Basin Project, Washington. The work is situated approximately 8 miles west of Warden, Washington. Principal items are approximately: 49,300 cu. yds. of excavation; 1,150 cu. yds. of concrete; furnishing and erecting 260,000 lbs. of structural steel; 7,400 cu. yds. of roadway surfacing; furnishing and handling 1,600 bbls. of cement; and other work. Time allowed for completion will be 450 days. For particulars, address Bureau of Reclamation, Coulee Dam, Washington; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(500)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2884) will be received by Bureau of Reclamation, Bismarck, North Dakota, February 7, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of 2 wood-pole, H-frame-type transmission lines for transmission division, North Dakota, Missouri River Basin Project. The work is situated between Jamestown and Forman, North Dakota. The lines are: 115-kv Jamestown-Edgeley, approximately 38 miles long; and 69-kv Edgeley-Forman, approximately 70 miles long. Time allowed for completion will be 160 days. For particulars, address Bureau of Reclamation, Bismarck, North Dakota; or Building 1-A, Denver Federal Center, Denver, Colorado. MICHAEL W. STRAUS, Commissioner. (502)

Department of Commerce, Bureau of Public Roads, December 30, 1949. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., February 1, 1950, for the construction of Project 3M9-3N7, Natchez Trace Parkway, Madison and Leake Counties, Mississippi. Length—22.264 miles. The approximate quantities of the more important items are as follows: 55,900 Cu. Yd. Borrow; 1,100,000 Gal. Tar; 78,700 Tons Type I-3 Hot Asphalt Concrete Pavement and 2,700 Units of Seeding. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or certified check made payable to the Treasurer of the United States will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained from the Bureau of Public Roads offices, First National Bank Building, Florence, Alabama, or 1440 Columbia Pike, Arlington, Virginia. H. J. Spelman, Division Engineer.
(498)

READ THE OFFICIAL PROPOSAL COLUMNS OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: January 17, 1950 (480)

Downsville Dam and Appurtenant Works

CONTRACT 401

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, January 17, 1950, for Contract 401, for the completion of the construction of the Downsville dam of the Pepacton reservoir and for the construction of the waste weir, weir channel and waste channel of that reservoir, the release water chamber and tunnel and the appurtenances of all of these structures, together with the closure of the existing diversion tunnel and the final grading in the vicinity of the dam, all as set forth in the specifications. The Downsville dam will be approximately 2,450 feet in length with a maximum height of about 204 feet and will be constructed of earth compacted by rolling. The work is located near the Village of Downsville, Town of Colchester, Delaware county, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of The Comptroller of The City of New York, in the amount of four hundred thousand dollars ($400,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, HENRY HESTERBERG, RUFUS E. McGAHEN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: January 31, 1950 (494)

Construction of River Water Supply

1. SEALED BIDS for the materials and construction of a

MAUMEE RIVER WATER SUPPLY FOR THE CITY OF BOWLING GREEN, OHIO

will be received by the City of Bowling Green, Ohio, at the office of the Board of Public Affairs in the City Hall, Bowling Green, Ohio until

12 O'CLOCK, NOON, EASTERN STANDARD TIME,

TUESDAY, JANUARY 31, 1950

and at that time will be publicly opened and read aloud in the Council Room.

2. The proposed work consists of the construction of

Section A—*Low Service Pumping Station;* 22' x 36' x 40' high, with entrance channel, bar screens, traveling screen, pumps, piping, electrical and appurtenances.

Section B—*Water Treatment Plant;* lime soda ash type of water softening plant capacity 3.0 M.G.D., with high service pumping station. Building 56' x 115' x 37' high.

Section C—*Transmission Main;* Approximately 43,300' of 16", or 18", or 20" main fittings, valves, and hydrants.

Section D—*Distribution Mains;* Approximately 12,400' of 12" and either 16" or 18" or 20" mains with fittings, valves and hydrants.

3. The contract documents, including plans and specifications are on file at the office of the Board of Public Affairs in the City Hall, Bowling Green, Ohio, and at the office of the Consulting Engineers, Finkbeiner, Pettis & Strout, 518 Jefferson Avenue, Toledo, Ohio. Copies of the documents may be obtained by depositing $30.00 with the Consulting Engineers for each set of documents so obtained. The amount of the deposit for each set of documents will be refunded to each actual bidder or vendor who returns the plans and documents in good condition prior to or at the time of opening of bids.

4. All bids shall be signed and submitted on the blanks which are bound into the specifications and shall be secured from the Consulting Engineers. Bids shall state the price for materials and labor separately on the blanks provided therefor; shall be enclosed in a sealed envelope marked "Bid for Low Service Pumping Station", and/or "Bid for Water Treatment Plant", and/or "Bid for Transmission Main", and/or "Bid for Distribution Mains", and shall be addressed to the Board of Public Affairs, City Hall, Bowling Green, Ohio.

5. Each bid must contain the name of every person, firm or corporation interested in the same, and must be accompanied by either a proposal bond with security satisfactory to the Board, or by a certified check on a solvent bank, in the amount of 5% of the bid, made payable to the City of Bowling Green, Ohio, as a guaranty that if the bid is accepted, a contract will be entered into and its performance properly secured.

6. The City of Bowling Green reserves the right to reject any or all bids; to waive any irregularities in bidding; and to accept the lowest and best bid.

7. No bidder may withdraw his bid for a period of 40 days after the scheduled closing time for receipt of bids.

By Order of the Board of Public Affairs
City of Bowling Green, Ohio
J. R. McDowell, Chairman

Bids: January 16, 1950 (497)

Sewer Construction

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 245-S

Sealed proposals for constructing the Paint Branch Trunk Sewer from Northeast Branch to Baltimore-Washington Boulevard, Berwyn District, approximately 590 feet of 10-inch CSPX, 5,880 feet of 30-inch RCCP and 130 feet of 30-inch RCCPX sewers, will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until Monday, January 16, 1950 at 2:20 P. M., Eastern Standard Time, at which place and time they will be publicly opened and read.

Plans and specifications may be obtained from the office of the Chief Engineer of the Commission, Hyattsville, Maryland, upon deposit of $5.00, which deposit will be returned to bidders or to those returning plans and specifications in good condition.

Dwight B. Galt
Warren Browning
Leland G. Worthington
Commissioners

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

STRUCTURAL DETAILER. Experienced, needed—good opportunity. Address Arkansas Foundry Company, Box 909, Little Rock, Arkansas.

STRUCTURAL CHECKER-detailer. All type structures. State qualifications, availability. Location East. P-1818, Engineering News-Record.

FLOOD CONTROL Engineer. Prefer engineer with general experience on water and flood control projects and Corps of Engineers reports. Must be able to meet the public. Opportunity to affiliate with a progressive agency responsible for developing a sound State water control policy. Salary $4800 per year. P-1863, Engineering News-Record.

WANTED—Two experienced Sewer Construction Foreman and Superintendent for Concrete Pipe and Rock Tunnel—Inquire United Foundation Corporation, 680 Lexington Rd., Union, N. J., or phone Unionville 2-4257.

PAVING SUPT. Able take charge entire operation concrete. Location: New York State. Write experience, salary required. P-1862, Engineering News-Record.

MAINTENANCE SUPERINTENDENT. Varied experience in general street and sewer maintenance and construction required. Salary step plan, $341 to $426 per mo. Civil Service, vacation, sick leave, retirement plan, medical insurance. Address replies to City Engineer, P.O. Box 391, Redwood City, Calif.

WANTED—YOUNG Engineer with some experience in estimating for building contractors. Give references and state salary required. Location West Virginia. P-1928, Engineering News-Record.

CONSTRUCTION SUPT. with proven record to handle multi-unit housing and dormitories, including trades. Must be qualified to organize and handle projects in $1,000,000.00 class. In reply give full qualifications, references, salary expected and availability. P-1924, Engineering News-Record.

(Continued on page 82)

WANTED
BRIDGE DESIGNERS,
DESIGNER DRAFTSMEN, RESIDENT
HIGHWAY ENGINEERS, SOILS ENGINEER
Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.
P-1921, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

WANTED—SALES ENGINEER
For established firm in the Pittsburgh district making materials used widely in bridge construction and industrial plants. Must be experienced and preferably have civil engineering education.
P-1881, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

SANITARY ENGINEER
Wanted for position of Engineer-Manager of Sanitary District. Broad experience in complete treatment of sewage and in administration required. Early availability desirable. Apply Board of Trustees, Urbana and Champaign Sanitary District, P. O. Box 18, Urbana, Illinois.

POSITIONS VACANT
"Checkers and detailers for structural steel shop drawings; position permanent; pleasant working conditions and good salaries for competent men; state age, qualifications, salary, and when available in first reply; location Central New York."
P-1923, Eng. News-Record
330 W. 42nd St., New York 18, N. Y.

SALESMAN
WANTED—with established following among general contractors in Metropolitan area. Capable of producing volume business. Lumber experience not essential. Write only, stating age, salary, & past connections. (Confidential.)
DORAN LUMBER CORP.
1040 Grand St. Brooklyn, N. Y.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** EQUIPMENT USED OR RESALE

UNDISPLAYED RATE

(Not available for equipment advertising)

$1.20 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.
Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

DISPLAYED RATE

The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col., 3 col.—30 inches to a page. E.N.R.

New advertisements received by January 16th will appear in the January 26th issue.

(Continued from page 81)

POSITIONS WANTED

GENERAL SUPT. Construction-Project Manager, Graduate Civil-Mech. Engineer, 25 years diversified experience, including estimating; 15 yrs. as general supt.; seven yrs. foreign work, varied projects including refineries, industrial-chemical-steam-hydro electric-power and war plants; docks, utilities, airports, highways, railroads, public works, fireproof buildings, mass-housings. Speak, read Spanish, Portuguese, German. A-1 references. Native American. Good health. Available immediately. Foreign assignment preferred. PW-1785, Engineering News-Record.

QUANTITY ESTIMATOR, Grad. Civil Eng'r. Six years experience preparing quantities for priding public, commercial, indus. bldgs. PW-1796, Engineering News-Record.

CHIEF ESTIMATOR for General Contractor Available. Experienced all types General Construction. Current volume $60,000,000 per annum. Base salary $12,000 per year. Excellent references. PW-1815, Engineering News-Record.

PRESSURE GROUTING Supt. Available with experience man. Or will train your crew. PW-1816, Engineering News-Record.

CONCRETE FOREMAN—Also handle laborers in many branches of construction. Available now. PW-1815, Engineering News-Record.

CONSTRUCTION MANAGER or General Supt. available. 45. Married. Now located in Florida. Could manage Florida office for reliable contractor. 22 years experience estimating, managing and supervising construction. A Civil Engineer ready to accept complete responsibility. PW-1854, Engineering News-Record.

MECHANICAL ENGINEER—Age 28, experienced in take-off, purchasing, expediting, and field supervision on mechanical and process equipment. Desires position with General Contractor or Mechanical Subcontractor. Midwest location preferred. PW-1775, Engineering News-Record.

OFFICE MANAGER—Cost Accountant, with 13 years construction and maintenance background, including 6 years foreign. Capable supervision all personnel, payroll, and administrative functions. Married, age 33. Available March 1. PW-1893, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, 18 years experience, heavy grading projects, earthen dams, airports, flood control. Can completely manage business in this field. PW-1875, Engineering News-Record.

ASPHALT SUPERINTENDENT — Twenty-five years experience—City streets and roads—of Macadam and concrete with hot plant mixtures—sheet asphalt, asphaltic concrete—some penetration. Worked with Warren, Commer, Simplicity and H.R. plants—Married and sober. PW-1903, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT or Project Manager. Over 15 years experience; Industrial, Commercial, and Governmental work. Guarantee satisfactory service. Excellent references. PW-1896, Engineering News-Record.

WATER SUPERINTENDENT—12 years varied experience in water, sewage, and trade waste disposal operations. Chemist and registered professional sanitary engineer. Midwest location preferred; others considered. Available now. PW-1895, Engineering News-Record.

"WE HAVE FED MILLIONS"
30 Years Experience in the
HOUSING and FEEDING of MEN
Valentine B. Kane & Assoc.
1410 State St. New Haven 11, Ct.

POSITIONS WANTED

SUPT., GEN. Foreman, or foreman. Age 28, married, C.E. grad., 4 yrs. exp. building foundations, heavy timber structures, and large apt. houses. Have done work entailing well points, pumping, excavation by crane, bulldozer, shovel and backhoe. Handled fill by means of bulldozer and scraper. Two yrs. in office estimating, closing with subs, dealing with suppliers, and drafting. NY vicinity pref. PW-1888, Engineering News-Record.

ACCOUNTING, BOOKKEEPING, payroll and tax service. Weekly, monthly, special assignments. Metropolitan area. PW-1887, Engineering News-Record.

PRESSURE GROUTING SUPT. Available with experience men. Or will train your crew. PW-1816, Engineering News-Record.

PART TIME WORK WANTED

FREE LANCE Method—Can do your structural design and detailing, complete. Save you money, time and worry. PTWW-1897, Engineering News-Record.

SELLING OPPORTUNITY WANTED

OWNER'S REPRESENTATIVE. Guarantee contractor's complete compliance with owner's requirements. Over 15 years experience; including construction superintendent with reputable contractors and major industries. RA-1894, Engineering News-Record.

FOR SALE

One 6 cylinder MacIntosh Seymour (now American Locomotive Co.) Diesel engine. Serial 27655, Model 6-C-46, 4-cycle, 1250 H.P. at 164 R.P.M., direct connected to G. E. 2300 Volt, A.C., 2-phase, 60-cycle 1000 K.V.A. generator and G.E. direct connected exciter complete with generator field rheostat, exciter field rheostat, lube oil pump and motor, and complete with necessary watthour, ampere, voltage, power factor meters and necessary current and potential transformers.

May be inspected in operation at Municipal Generating Station, Rockville, Centre, N. Y., anytime prior to February 10, 1950. Will be sold "as is—where is", purchaser to remove prior to March 15, 1950.

Offers will be received to 2:00 P. M. February 10, 1950, by the **Commissioner of Public Utilities, Rockville Centre, N. Y.** Write for further information.

FOR SALE—TWO 1950 BARGAINS

1. **Adams Grader Model 512** Heavy Duty Four Wheel Rear Tandem Drive, powered with International UD 14 Diesel 76 H. P. engine, equipment—cab, lights, scarifier, 12 ft. blade, hood sides, Giant Vee Snow Plow and Wing. Completely and thoroughly overhauled. Tires perfect. Repainted. Looks and runs like new. Ready for immediate job placement.
   For quick sale priced at $7,500.00
2. **International TD-14 Crawler Tractor,** 1945 Model, with Bucyrus-Erie Angle Dozer, completely rebuilt, repainted and runs like new—new rollers, sprockets, take ups, bearing, battery, equipped with lights.
   Priced for quick sale at $6,000.00

Discount to Dealers — 10%
Prices delivered Our Yard.

R. W. BLEILER EQUIPMENT CO., INC.
579 New Park Avenue, West Hartford, Conn.
Telephone—Hartford 3-4293

FOR SALE
Bucyrus-Monighan model 5-W Diesel Dragline.
Manitiwoc model 1500-Comb. Shovel & Dragline.
Northwest model 80-D Diesel Shovel—2½ yd.
Marion model 192—2½ yd. Diesel Dragline.
Lima model 802—2 yd. Diesel Shovel.
Bucyrus-Erie model 38-B Diesel Dragline.
Northwest model 5—Comb. Shovel-Backhoe.
Bay-City ⅝ yd. Backhoe.
Caterpillar model D-6—W/Traction HI-lift.
L. M. KELLER & SON
Oak Park, Ill. Phone—Euclid 3-3398

Overhead Traveling Cranes
Structural Steel Buildings
Tanks - Conveyors
BENKART STEEL & SUPPLY COMPANY
2017 Preble Ave., Pittsburgh 12, Pa.

FOR RENT OR SALE
LORAIN mod. 79 Diesel 1½ cy Shovel, Backhoe, Crane
BULLDOZERS { Caterpillar D-7 / International TD-18 / International TD-14
hydr. & cable
DRAGLINE BUCKETS, 1 cy & 2 cy, new
All late models, fully repaired
BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 Tel: Canal 6-5693

— FOR SALE —
BARBER-GREENE 705 DITCHER
used less than 400 hours
Price—$5750
L. S. WESCOTT, R.D.8
PITTSBURGH 9, PA.

USED STEEL
Bridge Gratings For Sale, 30,000 sq. ft. Excellent for replacing old wooden decking. In sections 8' x 26', main carrying bars 1¼" x 2¾".
EDGECLIFF CONSTRUCTION CORP.
34-60 32nd Street, Long Island City 6, N. Y.

FOR SALE—ROCK BITS
IR Type 1—1⅞", 1⅞", 2⅛", 2¼" and 2⅝"
IR Type—2—1⅞", 1⅞" and 2⅛"
Timken Type "H"—1⅞" and 2⅛"
All center hole, four point.
Offered at less than manufacturers selling price.
FS-1533, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

WANTED

Wanted
SINGLE-DRUM HOIST
Single-line pull 5,000 pounds at 100 to 200 feet per minute; mounted with and driven by a 3-phase 440-volt 60-cycle 30 H.P. induction motor. Write
M. S. HOGAN
City of West Plains, Missouri

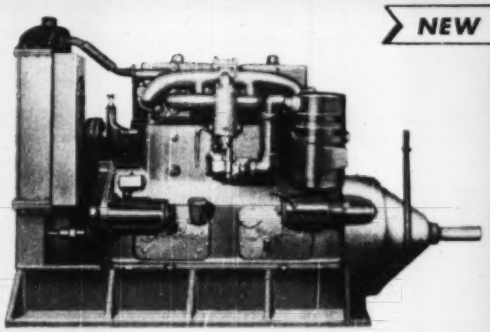
WANTED
5 TRAILER DUMPS
16 yards capacity. Must be in good condition. State age, price, make and location.
W-1920, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

WANTED TO PURCHASE
DIESEL OR DIESEL ELECTRIC LOCOMOTIVE CRANE
25 to 40 Tons capacity. Must be in excellent condition. Give description, boom length, age, location and price in reply.
W-1929, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

Devaluation IS A CHALLENGE

A $3,400.00 current market value item, available in limited quantities at a reduction of more than 50%

BOXED FOR EXPORT



NEW 100 H.P. CLIMAX ENGINE

The Climax valve-in-head Blue Streak Engine Model N4B is a 4-cylinder, 4-cycle gasoline engine which develops 100 hp. at 1200 r.p.m. An extremely dependable and flexible prime mover and like all Climax Engines is a rugged, heavy duty unit built to stand up under the most grueling industrial and field conditions.

Convertible to natural or manufactured gases.

COMPLETE WITH ACCESSORIES

ONLY $1,650 F.O.B. BLOOMINGTON, IND.

MONEY-BACK GUARANTEE (LESS FREIGHT)

WRITE
WIRE
OR PHONE

POWER FOR THE WORLD

ELECTRIC • GASOLINE • DIESEL • STEAM • POWER EQUIPMENT

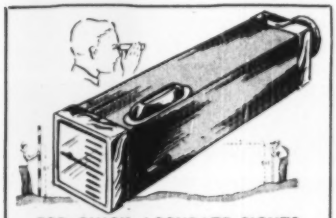
B. E. COWAN & ASSOCIATES

MAIN OFFICE • ELIZABETHTOWN, KENTUCKY • TELEPHONE • 4498 • 2173

JOBBERS • WHOLESALERS • EXPORTERS

SURVEYING INSTRUMENTS

USED • REBUILT • SALE
RENT • REPAIRING



FOR QUICK ACCURATE SIGHTS
NEW IMPROVED HAND

SIGHTING LEVELS

For preliminary survey. Ideal for builders, laying drains, roads, foundations, etc. Has thousands of uses. Comes with instructions.

SPECIAL LOW PRICE $1.85 SHIP. CHG. 15¢ EXTRA

J. JACOB SHANNON & CO.
214 N. 22nd St. PHILA. 3, PA.
THE OLDEST EQUIP. HOUSE IN PHILA.

SURVEYING INSTRUMENTS FOR RENT

LEVELS $15 PER MONTH

Daniel McFarland
624 Second Ave. San Francisco, 18, Calif.

FOR RENT

20-10 TON TO 25 TON CAPACITY

TRUCK CRANES

SECTIONAL BOOM LENGTHS TO 130 FEET

LIMA & P & H CRAWLER CRANES

30 TON TO 50 TON CAPACITY

SECTIONAL BOOM LENGTHS TO 175 FEET

THE ROGER SHERMAN TRANSFER CO.
EAST HARTFORD, CONN.

Branches: SPRINGFIELD, MASS. NEW HAVEN, CONN. ALBANY, N. Y.

FOR SALE

MODEL 307 GENERAL TRUCK CRANE, 18 ton capacity, mounted on 10 wheel 6 cylinder BQ Mack, air brakes, 90' main boom, excellent condition, $9,000.00 f.o.b. New York City.
THUCK CRANE MOUNTING, 10 wheel, 6 cylinder BQ Mack, reinforced by Motthaven, air brakes, perfect condition, $2,000.00, f.o.b. New York City.
15 TON STEEL STIFF LEG DERRICK, 90' boom, $1,900.00, f.o.b. New York City.
2 DRUM DIESEL HOISTING ENGINE AND SWINGER, new, in crates, 75 h.p. 7,500 line pull, $2,500.00, f.o.b. New York City.

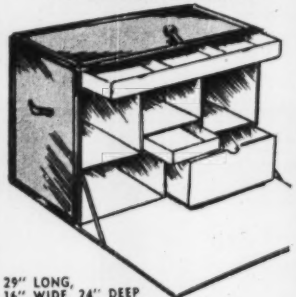
KARL KOCH
362 Casanova Street, Bronx 59, N.Y.
DAyton 9-7474

FOR SALE

30 ton Loco. Crane, diesel
22½ ton Loco. Crane, diesel
Crawler cranes, ⅜ yd. to 5 yd., 5 months to 30 years old.
Bucyrus-Erie, model 41-B steam crane
Locomotives, standard and narrow gauge
Barber-Green Asphalt Maintenance Plant
Pile driving equipment
Hoist, gas, electric and steam power
Tank Car Heater

"STONE THE CRANE MAN"
306 ARCHITECTS BLDG.
DETROIT 1, MICHIGAN

U. S. ARMY ENGINEER'S FIELD DESK



29" LONG,
16" WIDE, 24" DEEP
COMPLETE WITH LOCK & KEY

A sturdy iron bound chest with lid that serves as drawing board or desk, has compartments and drawers for records etc. Has hundreds of uses. RECONDITIONED.

• ENGINEERS • SURVEYORS
• PAYMASTER • SUPERVISORS

Cost Over $52.50 **$7.95** 2 For $15.00

Ship. EXPRESS or MTR. FRT. F.O.B. PHILA.

BRAND NEW U. S. NAVY WADING OR MUCKING

COVER ALL **SUITS**

WATERPROOF—UNSINKABLE

Protects your men when working in flooded excavations and ditches or when there is danger of stepping into deep water. Suit comes with inflateable air cells, attached rubber gloves and boots. Made of heavy rubberized duck.

REGULAR $40.00 VALUE **$8.95**

F.O.B. PHILA.

NEW U. S. ARMY ALL RUBBER WATER PROOF ARTICS

Sturdy construction, slip proof soles, reinforced seams.

SIZES 6 to 12

4 BUCKLE $4.35
5 BUCKLE $4.95

SHIP CHG. 50¢ EXTRA

J. JACOB SHANNON & CO.
214 N. 22nd St., Phila. 3, Pa.
THE OLDEST EQUIP. HOUSE IN PHILA.

FOR SALE

1—1½ Cu. Yd. Amsco Shovel bucket, new, complete with teeth and sheave for P & H Shovel. Price $1450.00

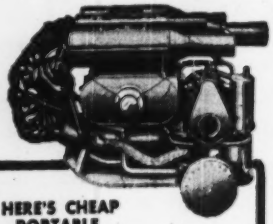
Phone Williams 1-8600
Hillsgrove, Rhode Island

HERMAN NELSON HEATERS

250,000 BTU's per hour

Overhauled, Painted, Testrun and packed in new crates.

Complete with one 12" duct and six 6" ducts. Chipping weight 450 lbs. **Price $395.00** each f.o.b. Detroit, or York, Pa.



HERE'S CHEAP PORTABLE

HEAT FOR ALL

Portable Heaters expedite Winter work at small cost! Emergency heat for any purpose. **DRIES** concrete, plaster, grain, paint, lumber etc. **STARTS** cold motors, trucks, tractors, airplanes etc. **THAWS** frozen materials, plumbing, machinery and men.

These Stewart Warner war surplus preheaters produce 100,000 B.T.U.'s per hour on 1½ gallons gas and deliver same anywhere thru three long ducts. Starts like outboard motor. Order now...Supply limited. Spare parts available.

Enclose check or money order or send 1/3 deposit, balance C.O.D. with privilege of examination.

Rebuilt and test run
Now
$195.00
F.O.B.
Quantity Discounts

KARL ORT
Department NR-3
YORK, PA.

FOR SALE or RENT ALL LATE MODELS

1—N. W. Shovel, 2½ c.y. new Oct. 1946
1—N. W. Shovel, 1½ c.y.-new April 1946
1—Allis Chalmers Tractor Model HD19H, new May 1948
5—D W 10's—used 2500 hours
1—Caterpillar Auto Patrol #12—9K4626
1—Caterpillar D8 Angledozer #8R8933
1—Caterpillar D7 Bulldozer 4T5988

WILLIAMS CONSTRUCTION CO.
Box 145, Middle River, Baltimore 20, Md.
Phone: Essex 1310

FOR SALE
UNUSED Attachments 40% to 50% off

Amsco 2 CY dipper for Lorain 820
Amsco 1½ CY dipper for P&H 655
P-M ¾ CY dipper for Koehring 304
P-M ¾ CY dipper for Buckeye 70
B-E 15B fairleads.
BE 54B fairleads.
Lorain 820 fairleads & 70' boom.
Lima 34 Paymaster shovelfront.
Manitowac 3000 standard shovelfront.

SHOVELS, DRAGLINES, BULLDOZERS.
Late models in top condition.
Manitowac 3500 Hilift shovel. 1947.
Manitowac 3000 shovel, standard or hilift.
B-E 37-B standard shovel. D-13000.
Northwest 25 ¾ yd. dragline.
Lima Model 34 shovel, 350 hours.
Buckeye 70 ¾ yd. shovel, gas. Unused.
Buckeye 70 ¾ yd. dragline, gas. Unused.
Caterpillar D-8 #2U series, cabledozers.
Caterpillar D-8 #1H series, cabledozer. $7500.00.
Caterpillar DW-10 tractors with LaPlante Choate CW-10 scrapers.
4 A-C HD-10 bare tractors UNUSED. $4,800.00.
2 Buda 25KW Generators.
1 Caterpillar 25KW Generator. D-13000.

FRANK TESTA
925 Citizens Bldg. Cleveland, Ohio

TUNNEL EQUIPMENT

6—Ingersoll-Rand DA-35 Wet DRIFTERS, 1¼" chuck (Round) with automatic power feed, sliding cone, steel centralizer, New York Head, mounted on 48" aluminum shell with column clamps.
2—Ingersoll-Rand DA-35 Wet DRIFTERS, 1¼" chuck with automatic power feed, sliding cone, steel centralizer, New York Head, mounting for 6' steel change, on pneumatic controlled DRILLING BOOM.
2—AXIVANE FANS, Model 25-1¼ X 3450 complete with 15 hp. 220 volt, 3 phase 60 cycle motor, with inlet bell, inlet screens, fan supports and adapters for 24" tubing.
1—Garner Overshot LOADER, 2 cubic yard skip Serial No. 1002 mounted on Caterpillar D-6 TRACTOR—Serial No. 9U2618 wide gauge with electric starter, rigid bar and guards.

All equipment purchased new April 1949 and used for 22,000 cu. yds. tunnel excavation. Drills completely reconditioned. Fans and Loader in good condition.

W. K. McILYAR CONSTRUCTION CO.
Box 209 Gore, Oklahoma

FOR SALE

LINK BELT K-55 2 YARD CRAWLER CRANE, excellent condition, 1948 Buda diesel engine, 60' boom and fair lead, f.o.b. Miami, Florida, $15,000.00.

P&H 255-A TRUCK CRANE, 80' boom, mounted on 10 wheel truck, 18 ton capacity, excellent condition, $10,000.00 f.o.b. Miami, Florida.

KARL KOCH
362 Casanova Street, Bronx 59, N. Y.
DAyton 9-7474

Lightning Protection Systems

Underwriters' approved installations, or to your specifications. Send plans, specifications.

A. H. PETERSON
1029 Grove St. Meadville, Pa.

FOR SALE

1—Marion ¾ c.y. shovel 1942 Model 331 with Backhoe attachment complete.
1—Adams Grader, 1941 Model #303-H-371.
1—Adnun Black Top Paver—12-ft. spread Model D 226 P 3, Serial #1014.
1—Hough Payloader—Model H.L.A. International Gas Engine 60" Bucket.

All equipment recently overhauled and in first class condition, attractively priced. Further details upon request.

E. B. McGURK, INC.
P. O. Box #630, 355 Barbour Street
Hartford, Conn.
Telephone—Hartford 7-7106
S. F. Mitchell, Pur. Agent

FOR SALE
STIFF LEGGED CRANES

2—30 foot American Hoist and Derrick Co. Stiff Legged Cranes—40-ton capacity, 30 degree lateral swing, equipped with 1—100 HP motor, 1—80 HP motor 1—35 HP motor, with all controls, f.o.b. present location.

Can be examined at East Second Street and Hobart Avenue, Bayonne, N. J.

PHARMA CHEMICAL CORPORATION
BAYONNE, NEW JERSEY

OWNER SALE

NEW EQUIPMENT

SAVE $ $ $ $ $

BUY EQUIPMENT at 20% to 50% of TODAY'S COST

Coolers	Motors
Scrubbers	Pumps
Recouperators	Reducers
Filters	Starters
Tanks	Transformers

Many other items
ACT TODAY

EQUIPMENT INSTALLED BUT NEVER USED

MILL AND QUARRY EQUIPMENT CO.
Phone 5-7741 P. O. Box 1486
Baton Rouge, Louisiana

For Sale

TRACTORS

Cat. R.D. 6 with Hyster Winch.....$1475.
Int. T.D. 40 B.E. Blade.....1975.
Int. T.D.-14 B.E. Angleblade.....3750.
Rebuilt engine
Int. T. 40 Tracksen Pipelayer.....1975.

GRADERS

Warco UD-14 Diesel Engine.....3750.
Duplex Gas 10' Blade.....1495.

SHOVELS

Byers Jr. Shovel & Hoe.....5900.
Byers 83 Shovel & Crane.....7950.
B.E. 20-B Dragline.....4895.
Lessman 5/8 yd. Rubber.....1450.

SHOVEL FRONTS

Insley ½ yd. Cable Crowd.....565.
Lorain L-35.....975.
Lorain-40.....750.
Am. Gopher 1 yd.....950.
Garwood Hydraulic Scraper 8½ yd.....1175.
Hercules 3 wheel Roller 10 ton.....1595.
Nelson Crawler Type Bucket Loader.....1150.

CRANES

Shepard 3 ton D.C. Mon-O-Rail.....$ 895.
Alfred 5 ton D.C. 30' Span.....3750.
Shaw 5 ton D.C. 52' Span.....4975.

CRUSHERS

Climax 9" x 16" Buchanan 40 x 48"
Telsmith 36" Mikro Pulverizer 24"

RAY C. NOLL EQUIPMENT CO.
Box 826, Phone 2762 Lewistown, Pa.

SPACE HEATERS

War Surplus Bargain

New-Ready To Use!

40,000 BTU capacity

—Burning gasoline, kerosene or diesel fuel
—Electric blower—12 V. DC or 110 V. AC using small transformer.

Portable, Quick, Clean Heat

Ideal for work under construction, emergency heat or auxiliary heaters.

$95.00 each

Crated in Original Export Boxes

Telephone FRanklin 2-4028

Clapp, Riley and Hall Co.
14 No. Clinton St. Chicago 7, Illinois

FOR SALE

10 P&H 300 AMP. ELECTRIC ARC WELDING MACHINES, 440 volt, on steel wheels, excellent condition, $70.00 each, f.o.b. New York City.

5 MOGUL METALLIZING GUNS, perfect condition, $100.00 each, f.o.b. New York City.

5 NELSON STUD WELDERS, complete with gun and quantity of studs, excellent condition, $100.00 each, f.o.b. New York City.

KOCH
362 Casanova St., Bronx 59, N. Y.
DAyton 9-7474

For Sale at a Bargain Price

2—D8 Tractors 8R Series

1—D7 Tractor 7M Series

1—D8 Tractor 1H Series

All in good working condition, equipped with LeTourneau equipment.

1—Lima Model 750, 1¾ yd. diesel, air control, excellent condition.

1—Osgood Model 800, 1½ yd. diesel, air control, excellent condition.

TUCKAHOE CONSTRUCTION CO.
116 Columbus Avenue, Tuckahoe 7, N. Y.

New Guaranteed . . . 60 TON
HYDRAULIC JACKS
Navy Surplus
ILLUSTRATED CATALOG **60% off**
BERKELEY DISTRIBUTORS INC
[illegible] JOHNSON AVE. [illegible]

FOR SALE

Complete bargain price $3750.00

Brand New Chicago Diamond Drill, 25 horse Hercules motor. Hydraulic swivel head, 205 ft. N drill rods, lifting bail, 6 ft. drill collar, water swivel, 38 ft. high pressure hose, 2 roller rock bits and adapter, 24 ft. derrick mounted on 1945 Dodge four wheel drive truck.

FRANK ZOWASKI
Box 127 New Hampton, New York

FOR SALE

1—N. W. Shovel

1½ c.y., Diesel New, never been used.

A. V. WILLIAMS
Box 145, Baltimore 20, Md.
Phone: Essex 1312

2—LORAIN'S #82 Shovel & Crane Comb. Serial Nos. 14460 & 11442—2 Yd. Shovel Front, 75' Boom, Caterpillar Diesel engine. (Rental Only).
1—HANSON CRAWLER CRANE 1945, ⅜ Yd., 30' Boom, Mdl. #30, Ser. #1748. Never used.....$4000.00
1—LOHSE YARD CRANE 5 Ton, Wheel Mounted, Ser. #415.....$880.00
1—BULLDOZER with 8' Garwood hydraulic Blade, Internat. Mdl. T-20.$1400.00
1—PILE HAMMER, Air or steam, 5000 Lbs. Union #3.....$985.00
1—AIR COMPRESSOR, Ingersoll-Rand, Portiable T-20 Ser. #PP 62343, Mtd. on 4 steel wheels.....$275.00
1—AIR COMPRESSOR, Ingersoll-Rand, Stationary Class ER-1, 10x10, Capacity @ 100 lb. pressure 291 CFM., Ser. #39442.....$1000.00
20—DRIFTERS, Chicago Pneumatic, CP-5, Each.....$75.00
2—PAVING BREAKERS, Ingersoll-Rand CC-80 Each.....$95.00
1—OIL FURNACE, Ingersoll-Rand, Model "F".....$35.00
DRILL STEEL (1500 Pcs.) 1" hex x 4¼" Shank, 2 ft. long. Each.....$1.90

EDWARD R. GEE ASSOCIATES
P. O. Box 5575 Phone: SA-7-1883
800 S. 49th Street Phila. 43, Pa.

RAILS-TIES

TRACK ACCESSORIES

PILING

RAILS—TIE PLATES

Angle Bars—Frogs & Switches
Stocks at Various Locations

W. H. DYER CO., INC.
611 Olive St. GArfield 4807 St. Louis 1, Mo.

For Sale or Rent

STEEL SHEET PILING

Most all lengths and sections at various locations
Vulcan and McKiernan Pile Hammers & Extractors

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St. Chestnut 4474 St. Louis, Mo.

PROFESSIONAL SERVICES

Industrial Drilling and Boring Corp.
FOUNDATION BORINGS
GEOLOGICAL SURVEYS
P. O. Box 1206 1746 E. Adams St.
Jacksonville, Florida

Consoer, Townsend & Associates
Water Supply—Sewerage—Flood Control & Drainage — Bridges — Express Highways—Paving—Power Plants, Appraisals — Reports — Traffic Studies—Airports.
351 East Ohio St., Chicago 11, Illinois

Metcalf & Eddy
ENGINEERS
Investigations Reports Design
Supervision of Construction and Operation
Management Valuation Laboratory
Statler Building 111 Sutter St.
Boston 16 San Francisco 4

Jones, Henry & Schoonmaker
(formerly Jones & Henry)
Consulting Sanitary Engineers
Water Works, Sewerage & Treatment
Waste Disposal
Security Building Toledo 4, Ohio

52 TIMES

a year you can make contact with present or prospective clients, for your engineering services through this PROFESSIONAL SERVICES SECTION.

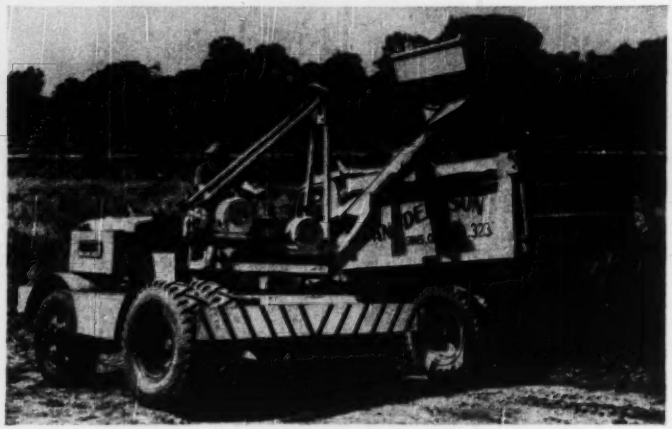
For information write

ENGINEERING NEWS-RECORD, 330 W. 42nd St., N. Y. 18, N. Y.

Gustave M. Goldsmith
Consulting Engineer
Structural and Building Design
Quantity Surveys
Production Planning
1734 Bella Vista, Cincinnati 29, Ohio

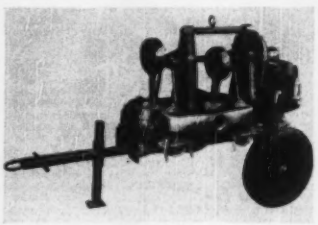
Albright & Friel, Inc.
Consulting Engineers
Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning, Reports, Valuations, Laboratory
121 So. Broad St., Philadelphia 7, Pa.

NEW PRODUCTS



Loader Features Full-Hydraulic Operation and 180-Degree Swing

Swing Loader is designed to handle standard ¾-yd. material bucket, or up to a 2-yd. snow-handling bucket. Features include full-hydraulic operation, 180-deg. swing, and quick-change convertibility to mobile crane or backhoe. It is capable of loading from any point in a 10-ft.-wide swath. Unit will work within 2 ft. of truck, eliminating backing and turning operations. Main weight, and all leverage of load, are centered on the four driven front wheels for maximum traction and crowding power. Bucket is provided with power dump and return. As a crane, the Swing Loader has a capacity of 3 tons, and will handle booms from 10 to 23 ft. in length. Operator has choice of gravity or power control on hoisting and topping for crane work. Either gasoline or diesel power is available. Travel speeds range to 15 mph. —THE MANDT MFG. CO., 490 W. GOODALE ST., COLUMBUS 8, OHIO.



Double-Diaphragm Pump

Constant-flow of muddy, sandy, or debris-laden water is possible with the Novo double-diaphragm pump. This is possible because one diaphragm is always pumping while the other is discharging. This pump parallels the company's single-diaphragm model in engineering, design, and construction. —NOVO ENGINE CO., 702 PORTER, LANSING, MICH.

Carburetor Preheater

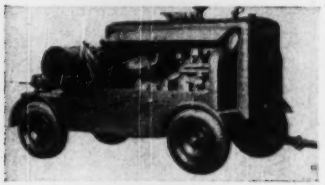
Preheater unit is designed to increase atomization of gasoline, and to provide immediate combustion and rapid starting in temperatures as cold as 30-deg. below zero. Unit is installed between carburetor and intake manifold with wires attaching to battery line and a dashboard switch. Quik-Start preheater draws approximately 10 amp.—KEMODE MFG. CO., INC., 161 W. 18 ST., NEW YORK, N. Y.

Liquid-Flow Slide Rule

Plastic slide rule solves problems in the flow of liquids in pipes and tubing. Made of Vinylite plastic, the rule provides accurate calculations of pressure drop, pipe diameter, or rate of flow for any liquid whose viscosity and density are known. This rule can be used to solve problems in either turbulent or streamline flow and automatically indicates which type of flow exists in a given problem. It measures 10½x3¾ in.—C. J. MAJOR, 2252 FIFTEENTH ST., WYANDOTTE, MICH.

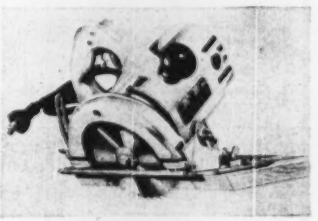
Draw Bar Dynamometer

Designed for use on traction tests, the Martin-Decker draw bar dynamometer can be used to determine horsepower, strength of structures, or in any other place where a pull or torque is to be measured. It consists of a combination indicator, recorder, and measuring element, and has a range to 50,000 lb. draw bar pull. The recorder can be furnished in any chart speed from 2 in./hr. to 6 in./min.—MARTIN-DECKER CORP., 3431 CHERRY AVE., LONG BEACH 7, CALIF.



Deluxe Compressors

New line of custom-built heavy-duty compressors will be limited to 100 per year in 105 and 210-cfm. sizes and 50 per year in 160 and 315-cfm. sizes. Features of the Air Chief AIRistocrats include extra-heavy-welded steel, vibrationless frame, hand parking brakes, and electric service brakes. Two hose reels, each of 150-ft. capacity, are provided.—DAVEY COMPRESSOR CO., KENT, OHIO.



Portable Electric Saw

Lightweight (11 lb.) electric saw is balanced for one-hand operation. The 6-in. Model 660 saw is powered by a 1-hp. motor and features a depth gage which adjusts to a full 2-in. straight cut; a rip guide which provides accurate control for long cuts; and a mitering adjustment, from 0 to 45 deg., with a bevel cut of 1¾ in. A telescopic blade guard closes automatically. Sawdust blower keeps the cutting edge fully visible at all times. —MILWAUKEE ELECTRIC TOOL CORP., 5316 W. STATE, MILWAUKEE 8, WIS.

Electric-Blasting Caps

Reduction of vibration from blasting operations carried on near populated areas is made possible by a new line of fractional-second-delay electric blasting caps. Instead of firing one large charge of explosives at one time and setting up one large shock wave, it is possible with the use of these caps to break up a large charge into smaller portions and fire each portion at fractional-second intervals. These new Western Minimax caps are accurately

(*Continued on page 88*)

—it'

"Taylor Forge has thought of everything!"

A construction superintendent said it, but it has been expressed in one way or another by thousands of men who have lived and worked with Taylor Forge Welding Fittings and compared them with all other makes.

From the very start, Taylor Forge did the improving: set up a rigid, seemingly unattainable set of specifications for ideal welding fittings long before they were produced on a commercial scale.

But it was easier to think of everything than to accomplish it. Only the knowledge that Taylor Forge had accumulated, only the forging skills that Taylor Forge had developed, could have produced welding fittings that please alike the men who design piping, the men who erect piping, and the men who pay the bills.

Today in the WeldELL line, you have the fittings that *ask* for comparison. Some of their plus-value features—features that are combined in no other fittings—are pointed out here. Remember that the plus-value line is also the broadest line! Coupon brings catalog.

Taylor Spiral-Weld Pipe is again promptly available in a broad range of sizes and thicknesses. Coupon brings new Spiral Pipe Bulletin 493.

TAYLOR FORGE TF

TAYLOR FORGE & PIPE WORKS P. O. Box 485, Chicago 90, Ill. • Eastern Plant: Carnegie, Pa. • Western Plant: Fontana, Calif. • District Offices: New York, Philadelphia, Pittsburgh, Houston, Los Angeles, Chicago.

☐ Please send new Catalog 484 covering welding fittings and forged steel flanges.

☐ Send new Bulletin 493 covering Taylor Spiral-Weld Pipe and related fittings.

Name_____

Position_____

Company_____

Street Address_____

City_____ Zone____ State_____

614-0150 *Mail to Taylor Forge & Pipe Works, P. O. Box 485, Chicago 90, Ill.*

NO TIME FOR FAILURES

CONTINENTAL MOTORS · Powerful as the Nation · AMERICA'S STANDARD

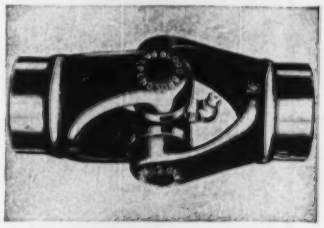
THERE'S no place in the construction trades for engines that have to be "babied". That's why more and more contractors are buying equipment with Continental Red Seal power. You'll find these dependable engines in leading makes of contractors' equipment—in earth-movers, mixers, compressors, winches, hoists, pumping units, generator sets—as well as in highway and industrial tractors and heavy-duty trucks. Such features as Continental patented individual porting, leakproof water pump, patented oil and dust seals, directional cooling, full-length water jacketing, and statically and dynamically balanced crankshaft with Tocco-hardened journals add up to real performance with minimum time-out. When buying equipment, it will pay you to choose a make with Red Seal Power.

The Red Seal parts and service organization spans the continent. Service whenever, wherever needed, backed by master warehouses at Dallas, Los Angeles and the Muskegon main plant.

Continental Motors Corporation

MUSKEGON, MICHIGAN

timed, are of one-piece all-metal construction, and are supplied in ten periods of delay. They are supplied with plastic-covered wires and plastic shunts, and are ventless and waterproofed. Base charge is RDX.—OLIN INDUSTRIES, INC., EXPLOSIVES DIVISION, EAST ALTON, ILL.



Universal Joint

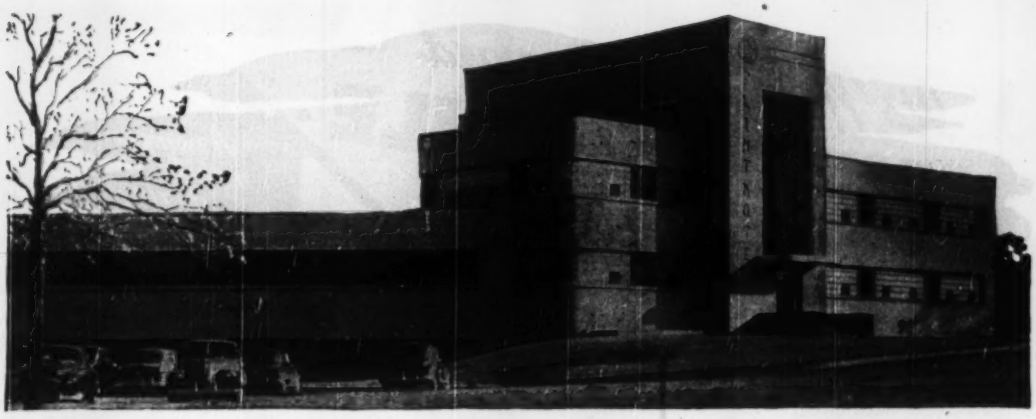
The K2R universal joint features a cork washer and retainer on each of the four trunnion bearings to seal lubrication in and to keep dirt and grit out of working parts. It is available in complete assemblies or in single joints for use with many types of construction equipment.—BLOOD BROS. MACHINE CO., ALLEGAN, MICH.

Cast-Iron Soil Pipe

Superspun process of producing cast-iron soil pipe results in a uniform pipe without seams. Centrifugally cast in spinning sand molds, Superspun is of uniform diameter and thickness throughout. It is available for shipment in limited sizes. Each piece is identified by a metal band around the hub of the pipe.—COMBUSTION ENGINEERING-SUPERHEATER, INC., 200 MADISON AVE., NEW YORK 16, N. Y.

New Truck Models

Features of the 1950 line of Chevrolet trucks include improvement in road performance through increased engine power plus advancements for added comfort and safety. The line comprises 20 series on nine wheelbases ranging from 115 to 199 in. The Load-Master engine for heavy duty units produces 105 hp., and 193 ft./lb. of gross torque and 189 ft./lb. of net torque. The Load Master 105 engine for the light and medium-duty trucks delivers 92 gross horsepower. Torque has been increased to 176 ft./lb. Hydrovac power brakes are available for heavy-duty models.—CHEVROLET MOTOR DIVISION, GENERAL MOTORS BLDG., DETROIT 2, MICH.



House of New Ideas

FOR PRODUCTS AND SALES

Flintkote employs experienced technicians... Research Specialists who spend every working day tracking down new facts on materials and methods that can improve or broaden Flintkote's wide line of products for industry.

Housed in 24 separate, efficiently equipped laboratories... in one of the most modern buildings in the country... these technicians set the pace for Flintkote plants from coast to coast. This assures better products and better results consistent with lowest possible costs ... for you.

These researchers understand what makes business "tick," too. And they accept new product requirements as a recurring challenge. Also, the quality of our materials that have been in use for decades is carefully checked for today's applications.

So, if you are a user, or a potential user of Flintkote Industrial Products for construction, manufacturing or converting, remember that these trained specialists are at your service, to help find the solution to your problems. Full scale testing and pilot production methods are available under one roof. And, they'll follow through in your own plant if you wish.

Whether your requirements are coatings, adhesives, binders, floorings... asphalt, rubber or resin compounds... Automotive, Marine, Railroad, Construction, Building Maintenance products... see what we have now and can offer you for the future.

THE FLINTKOTE COMPANY

Industrial Products Division

30 Rockefeller Plaza, New York 20, N. Y.

Atlanta • Boston • Chicago Heights • Detroit • Los Angeles
New Orleans • Washington • Toronto • Montreal

FLINTKOTE

Products for Industry

Testing effective coverage of asphalt coatings. The metal plate with coating is grounded and a charge is placed in the metal bristles of the brush. Even the smallest rupture in the film produces a visible spark, indicating incomplete protection.

Among Flintkote's many products is a line of asphaltic spray-on sound deadeners to quiet metal vibration noises. In a specially-built sound-proof room, an electronic device measures the ability of various coatings to meet rigid specifications.

Summer and Winter climate, rain and burning heat are produced in the Research Laboratory. This Twin-Arc Weather-Ometer provides accurate control of accelerated weathering tests. Products designed for exposure must survive for many years.

This small mill is used to break down various rubber materials to the right consistency for use in new products or processes. Full size operation follows in the production of versatile fluid rubber and rubber-like adhesives, coatings and the like.

It's New.. the one-yard MIXERMOBILE.

A complete mobile concrete mixing unit and elevator

MIXERMOBILE AS SHOWN HERE IS FOLDED READY FOR TRAVEL

GREATER PROFIT ON EVERY JOB...

The new one-yard Mixermobile Model M-6 built to fit all jobs, both small and large. Its complete mobility means more jobs covered every day.

SAVES money by using dump trucks—mixes concrete on the job.
SAVES cost of erecting tower—35-ft. tower attached.
SAVES cost of hoist and storage hopper—included with tower.
SAVES time—drive to the job, ready to mix in five minutes. When pouring is finished drive to next job.
Turns out 200 cubic yards of concrete per day.

Use MIXERMOBILE — the most economical method of handling concrete on the job. Cuts labor costs—no time wasted waiting for concrete. One man operates complete unit.

FEATURES: **HYDRAULIC CONTROLS.**
MIXER COMPLETELY ENCLOSED—controlled by specially designed shaft (gears enclosed on outside, no contact with cement.)
POWERED BY V-8 FORD ENGINE.
DISCHARGE TIMER
FOOL-PROOF WATER CONTROL SYSTEM.
WEIGHT—20,000 lbs.
Will pass all highway limitations.

WRITE TODAY FOR LITERATURE AND YOUR NEAREST DEALER

- 35-FT. TOWER lifts concrete in hoist bucket and empties into tower hopper. Eliminates cost of cranes and moving to and from the job. Extension may be had by special order.
- HYDRAULIC CONTROLLED SKIP holds 1 cu. yd. Loaded directly from dump trucks.

MIXERMOBILE MANUFACTURERS

6855 N. E. HALSEY STREET, PORTLAND 16, OREGON

Manufacturers' Publications

Wearing Parts for Shovels, Crushers—Oro-alloyed manganese-steel parts for wearing surfaces of power shovels and crushers are illustrated and described in Bulletin 1049. This bulletin points out which particular alloyed manganese steel renders maximum service for a specific application such as crawler treads, dipper teeth, and crusher jaws. —The Kensington Steel Co., 505 E. Kensington Ave., Chicago 28, Ill.

Lubricant Application Guide—Specialized lubricants for industrial and automotive equipment are listed in a 30-p. edition of the Keystone application guide. Included are recommendations for lubricating all types of bearings, power-generating units, transmission and materials-handling equipment, pump glands, valves and other equipment.—Keystone Lubricating Co., 21st & Lippincott Sts., Philadelphia 32, Pa.

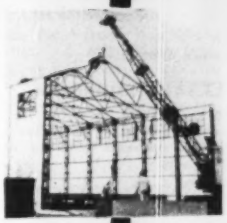
Technical Data in Looseleaf Form—Essential data for engineers and students covering mathematical subjects, chemical tables, metals, etc., are available in looseleaf form. This condensed information is prepared in pocket-size binders for immediate reference to necessary data. Free catalog contains complete information and list of titles.—Lefax, Inc., 9th & Sansom, Philadelphia 7, Pa.

Water-Conditioning Processes, Equipment—Concise outline describes products, services, and background of company producing water-conditioning processes and equipment. Bulletin WC-100 contains complete information on the company, its manufacturing facilities, advantages of the Graver equipment and methods, and a list of several typical installations.—Graver Water Conditioning Co., Dept. 163, 216 W. 14th St., New York 11, N. Y.

Woven Wire Screen Cloth—Feature of this 16-p. Bulletin 113-A is a set of tables designed to enable the reader to determine at a glance the sizes of openings available for a given diameter of wire. The bulletin also contains recommendations for the best diameter wire to select for a specific type of service. Enamel-coated screen cloth, a new product which has lengthened screen-cloth life in processing materials which have a combined cor-

(Continued on next page)

STEFCO's the buy in steel buildings



STEFCO

For scores of industrial, commercial and general service requirements, *Stefco's the buy!*

- Up faster with less labor!
- Require no field assembly of sash or doors!
- Flexible — to fit the job!
- Permanent — yet portable!
- Economical — from first to last — in cost, in erection, in maintenance!

If you're planning new buildings—regardless of style or type of construction—find out now how Stefco can meet your needs. Full details without obligation.

Write, wire or phone

STEFCO STEEL CO.

MICHIGAN CITY, IND., PHONE 115

SALES OFFICES

Chicago 4, Ill. 332 S. Michigan Ave. | St. Louis, Mo. 220 N. 4th St. | New York, N. Y. 50 Church St.

For names and addresses of other representatives Consult our Home Office.

DREDGES

HYDRAULIC
● DIPPER ●
CLAMSHELL

Bolted sectional steel hulls for landlocked, inland waters
If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.

DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

New Transits and Levels by Experts

Each Buff is dependable, accurate and economical.

Send for catalog #329.

Headquarters for Repairs

Every make of instrument, renewed by Skilled Workmen.

Our Shops are located at Jamaica Plain, Boston, Mass.

Buff & Buff Mfg. Company

HENRY A. BUFF, *President.*

Question What would happen—to your plant floors if they were pounded by tractors like that below?

Photo by courtesy of Caterpillar Tractor Co., Peoria, Illinois

Answer NOTHING — Nothing at all — they'd "take it" and remain solid, level, unbroken, *if* protected by

KLEMP SURE FOOTED AS A CAT HEXTEEL (Heavy Duty Surface Armor)

Klemp HEXTEEL
HEAVY DUTY SURFACE ARMOR

Lay HEXTEEL over floor — lock — fill with concrete or mastic — trowl flush with grid top. That's all!

For more than 10 years Klemp HEXTEEL has armored floors of the big Caterpillar plant. Over these floors vast tonnages of materials and products have rolled every working day. Yet the floors today are as solid, level, and free from faults as at the beginning. Neither pounding tractor lugs, nor 30-ton Sherman tanks could damage the invincible HEXTEEL protection. At surprisingly low cost your floors can be similarly protected—maintenance eliminated!

Check these HEXTEEL advantages

1. HEXTEEL'S heavy steel mesh holds concrete, asphalt or any filler in tight 1¼" hexagons. *Banishes cracking, buckling, potholes, ruts and breaks forever!*
2. Traffic travels smoothly on seamless flush top of mesh—in all directions.
3. HEXTEEL—armored floor outlasts the buildings. Free from maintenance.
4. Rapidly installed by unskilled labor. Tools are lent to customers by Klemp Company.
5. Can be applied over old or new floors, wood, cement, terrazo, asphalt or mastic. Self-anchoring construction patented.
6. No welding nor riveting. Fire-proof. Non-skid. Most economical steel armor made!

SEND FOR COMPLETE KLEMP CATALOG. Also shows Klemp Floorsteel, flexible floor armor that rolls out like a rug — Klemp Open Steel Gratings — Klemp Steel Safety Mats. Write

WM. F. KLEMP CO.
"Steel Flooring Specialists"
6608 S. MELVINA AVE., CHICAGO 38, ILL.

"GUNITE" CONCRETE (Since 1918)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill.; B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.; Philip D. Barnard, Dist. Mgr., 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans

See our catalog in Sweet's

McKIERNAN-TERRY
Wide-Range Line of
PILE HAMMERS and **EXTRACTORS**

Now made in complete, standardized line of 10 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors.

Write for free descriptive Bulletins.

Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specialty designed machinery.

McKIERNAN-TERRY CORP.
13 Park Row, New York 7, N. Y.

rosive and abrasive action, is described in detail.—ROBINS CONVEYORS DIVISION, HEWITT-ROBINS, INC., 270 PASSAIC AVE., PASSAIC, N. J.

One-Cylinder Diesels—Four new bulletins describe the Nordberg 4½x5½-in. one-cylinder diesel engine. These bulletins, Nos. 166, 167, 167-A, and 168, give specifications, detailed information, and outline drawings of the Model 4FS-1 diesel as adapted to power take-offs with and without clutch, generating units, and pumping units. The engine is rated at 15 hp. at 1,800 rpm.—Nordberg Mfg. Co., 3073 S. Chase Ave., Milwaukee 7, Wis.

Duct; Thermal Insulations—Two bulletins describe the features of two types of Fiberglas insulation. The bulletin on duct insulation (12 pp.) contains design data for its application; lists the properties of the material; and provides a detailed description of field-application procedure. The bulletin on thermal insulation (16 pp.) contains descriptions of all the forms of Fiberglas thermal insulation for industrial and building applications, data on thermal conductivity, and sound-absorption properties. It is illustrated with numerous application photographs.—Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

Corrosion-Resistant Cement—Chart indicates the resistance of both resin and silicate cements to various corrosive chemicals. Cements listed include Pennsalt PRF, Asplist, Causplit, Pennsalt HF, and Penchlor Acid Proof. Chart shows resistance of each of these cements to a list of 259 chemicals and chemical compounds.—Pennsylvania Salt Mfg. Co., Special Chemicals Department, 1000 Widener Bldg., Philadelphia 7, Pa.

Utility Ditcher—Eight-page color bulletin lists features of the Buckeye Model 306 utility ditcher. Various applications for this unit are described photographically in Bulletin 306. Another feature of the catalog, is an illustrated description of the component parts of the ditcher which account for its operational advantages.—Gar Wood Industries, Inc., Findlay Division, Findlay, Ohio.

Hints for Using Form Clamps—Suggestions for using Williams form clamps and their accessories are listed in new folder. Data are provided on spacing of walers, clamps, form-width spacing, securing corners, and other pertinent facts. The lower portion of

(Continued on page 94)

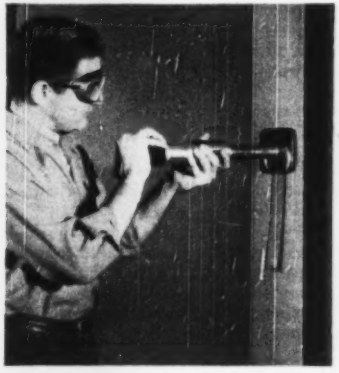
GREAT NEWS FOR CONTRACTORS . . .

THE POWDER-ACTUATED FASTENING TOOL *Comes of Age*

After Months of Laboratory Experimentation . . . After Thorough "On-the-Job" Testing . . . We Proudly Present the New and Amazing DRIVE-IT "300" the Powder-Actuated Fastening Tool Our Customers Asked For.

THE BIRTH OF THE DRIVE-IT IDEA

Three years ago Powder Power introduced the most revolutionary and efficient fastening method known. It was the DRIVE-IT powder-actuated tool . . . a tool that utilized a small power charge and a hardened steel "drive-pin" to fasten steel or wood to concrete or steel. Fastening with this tool was a split-second operation—eliminating the drudgery of drilling or hammering—saved contractors hours of time and thousands of dollars. In short, it was a bonanza for everybody



who had a steel or wood to concrete fastening problem. Thousands bought DRIVE-IT tools and letters of praise for their money-saving effectiveness flooded in.

PRESENTING . . . THE NEW DRIVE-IT "300"

Months ago our engineers went to work to design an *entirely new* and *better* powder-actuated tool . . . one which would embody all of the features our customers asked for. The result is the DRIVE-IT "300".

Here it is . . . it's ready for you NOW. Check these features and you'll realize why we say. "The new DRIVE-IT "300" is the *only* truly modern, efficient and *safe* powder-actuated tool on the market!"

1. POSITIVE 3-WAY SAFETY.
   1. **Permanently attached, adjustable safety pad. Can be used in restricted places.**
   2. **Cannot be fired accidentally. Tool must be depressed against *solid surface* to be fired.**
   3. **No hitting or lunging to fire—a twist of the wrist does it . . . *automatically!***
2. "CONTROLLED POWER" with *one* power charge. No need to buy 4 or 5 different charges.
3. 40% MORE POWERFUL than any other "22" tool. More power means deeper penetration, greater holding strength, more versatility.
4. AUTOMATIC EXTENSION BARREL for tight places—no need for extra, expensive extension barrels.
5. LIGHTWEIGHT. Tool weighs only 5 lbs. 10 ozs. Makes overhead work easy. Can use for hours without tiring effects.
6. LESS NOISE. Tool is much quieter in operation—easy on the nerves.
7. FLANGELESS DRIVE PINS. Easier to handle—cheaper to buy. No "ring" to dig out of tool after firing. No area exposed to corrosion on plated pins after driving.

There it is, mister! A powder actuated tool with the "bugs" out. One that can save you up to 75% in fastening costs and *still* keep your workers happy. Do yourself a favor and send for the whole story *today!*

DON'T DRILL IT . . . DRIVE-IT POWDER-POWER TOOL

Distributors Coast-to-Coast

POWDER POWER TOOL CORPORATION

0703 S. W. Woods Street • Portland 1, Oregon

Canadian Distributors: AMMO-POWER TOOL CO., LTD.
Foot of McLean Drive, Vancouver B. C., Canada

Sure I'm interested . . . Send me the story! Quick!

NAME_____

COMPANY_____

STREET AND NO._____

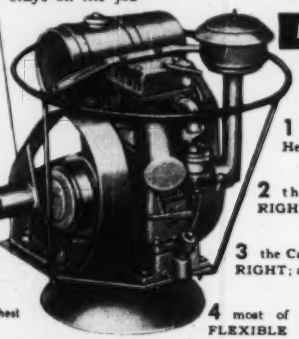
CITY AND STATE_____

POWDER POWER TOOL CORPORATION, 0703 S. W. WOODS STREET, PORTLAND 1, OREGON

STOW CONCRETE VIBRATORS
For a Better Job . . . and EASIER, LONGER USE

It's the flexible shaft that takes the beating . . . up to 9000 vibrations a minute. But in the STOW, you get the best flexible shafting known, built by the pioneer in flexible shaft manufacture and application. The unmatched STOW Flexible Shaft, coupled with a choice of power (gasoline) units and Vibrator Heads, gives you the concrete vibrator best for your work.

Every STOW Concrete Vibrator turns in better performance and stays on the job



Because

1 the Vibrator Head is RIGHT;

2 the Motor is RIGHT;

3 the Carryhandle is RIGHT; and

4 most of all, the FLEXIBLE SHAFT is RIGHT.

Write for complete folder on various types and equipment that aid you in meeting the strictest specifications in concrete work.

- 3 hp Vibrator for wide uses in harshest concrete. Variable speed.
- 1½ hp. general purpose.
- 1½ hp. direct driven. For use in light forms and shallow slabs.

STOW Manufacturing Co., 19 Shear St., Binghamton, N. Y.

IF IT'S IRON OR STEEL
REMEMBER to have it HOT DIP GALVANIZED
(DIPPED IN MOLTEN ZINC)

For a top quality job of genuine hot-dip galvanizing, send your materials to one of the galvanizers listed at the right. They are all members of the American Hot Dip Galvanizers Association and are pledged to adhere rigidly to its specifications for hot-dip galvanizing.

ALABAMA
THE LERIO CORPORATION, MOBILE
METALPLATE COMPANY, BIRMINGHAM

CONNECTICUT
WILCOX, CRITTENDEN & CO., INC., MIDDLETOWN

GEORGIA
ATLANTIC STEEL COMPANY
P. O. BOX 1714, ATLANTA

ILLINOIS
EMPIRE METAL PRODUCTS COMPANY, CICERO
EQUIPMENT STEEL PRODUCTS, BLUE ISLAND
JOSLYN MFG. & SUPPLY CO., CHICAGO
STANDARD GALVANIZING CO., CHICAGO

MARYLAND
SOUTHERN GALVANIZING CO., BALTIMORE

MICHIGAN
RIVERSIDE FOUNDRY & GALV. CO., KALAMAZOO

MISSOURI
COLUMBIAN STEEL TANK CO., KANSAS CITY
MISSOURI ROLLING MILL CORP., ST. LOUIS

NEW JERSEY
L. O. KOVEN & BROTHER, INC., JERSEY CITY
INDEPENDENT GALVANIZING COMPANY, NEWARK

NEW YORK
JEFFERSON UNION COMPANY, INC., NEW YORK
THE THOS. GREGORY GALV. WORKS, MASPETH

OHIO
ARMCO STEEL CORPORATION, MIDDLETOWN
THE FANNER MFG. CO., CLEVELAND
NATIONAL TELEPHONE SUPPLY CO., CLEVELAND
THE WITT CORNICE COMPANY, CINCINNATI
COMMERCIAL METALS TREATING, INC., TOLEDO

PENNSYLVANIA
LEHIGH STRUCTURAL STEEL CO., ALLENTOWN
PHILA. RANGE BOILER & TANK CO., COATESVILLE
COLUMBIA MALLEABLE CASTINGS CO., COLUMBIA
AMERICAN TINNING & GALVANIZING CO., ERIE
HANLON-GREGORY GALV. CO., PITTSBURGH
OLIVER IRON & STEEL CORP., PITTSBURGH
PENN GALVANIZING COMPANY, PHILADELPHIA

TENNESSEE
COMBUSTION ENGINEERING-SUPERHEATER, INC., CHATTANOOGA
M. M. HEDGES MFG. COMPANY, INC., CHATTANOOGA
NOLAND TANK AND GALVANIZING COMPANY, NASHVILLE

TEXAS
DALLAS IRON & WIRE WORKS, INC., DALLAS

WISCONSIN
ACME GALVANIZING, INC., MILWAUKEE

the folder contains a rod layout sheet for convenience in figuring inner rods. It is perforated for easy detachment.—WILLIAMS FORM ENGINEERING CORP., 1501 MADISON AVE., S. E., GRAND RAPIDS 7, MICH.

Worthington Bulletins—Three new bulletins have been released by Worthington. Bulletin R-1700-B1 describes the Worthington Mixer-Ejector for grouting operations; Bulletin H-1200-B40 describes a line of paving breakers and sheeting drivers; and Bulletin H-1200-B41 describes equipment for maintenance of railroad rights-of-way. —WORTHINGTON PUMP & MACHINERY CORP., CONSTRUCTION EQUIPMENT SALES DIVISION, HOLYOKE, MASS.

Maintainer Bulletin—Sixteen-page bulletin explains how the Huber maintainer's several front-end attachments can be used for a wide variety of construction and maintenance applications including grading, berm leveling, road planning, and bulldozing, and as a lift loader, snow plow, highway mower, one-way broom or patch roller. —HUBER MFG. CO., MARION, OHIO.

Materials-Handling Attachments—Attachments, tools, and accessories for Hyster lift trucks, straddle trucks, and mobile cranes are described in 28-p. catalog. Model views, diagrams, specifications, action pictures, cartoons and explanatory text are used to bring out the features of the various attachments.—HYSTER CO., 2953 N. E. CLACKAMUS, PORTLAND 8, OREG.

Metal Tire Chains—The Master Grip and Sterling-Wearwell tire chains are described in detail in Bulletin No. 148. These chains are designed for use with trucks, buses, tractors, and passenger cars. Repair and accessory units listed in the bulletin include emergency unit chains, side chain fasteners, emergency repair links, Liberty truck chain, welded side chain, repair links, tire-chain adjusters, lowering chains, connecting links, sling chains, and others. Prices are listed for each unit in the line.—CLEVELAND CHAIN & MFG. CO., BROADWAY & HENRY, CLEVELAND 5, OHIO.

Concrete Compression Tester—New tester, capable of exerting a ram pressure of 175 tons, is described in a 4-p. folder. This wheel-mounted unit is designed principally for testing concrete blocks. The bulletin describes the operation of the unit including the manually operated pumps, the leveling plate, the 12-in.-dia. ram, and the specially calibrated pressure gage for direct reading in psi's.—FORNEY'S, INC., NEW CASTLE, Pa.

ADVERTISERS IN THIS ISSUE

Abrams Aerial Survey Corp. 71
Allied Steel Prdcts. Corp. 95
American Hot Dip Galvanizers Assn. 94
American Mutual Liability Ins. Co. 62, 63
American Steel Dredge Co., Inc. 91
Anthony Co. 77
Armco Drainage & Metal Products, Inc. .. 16

Bay City Shovels 22
Bethlehem Steel Co. 59
Blaw-Knox Div. of Blaw-Knox Co. 20
Buff & Buff Mfg. Co. 91
Byers Co., A. M. ..... 2nd Cover

Cast Iron Pipe Research Assn. 14, 15
Ceco Steel Prdts. Co. 48, 49
Cement Gun Co. 75
Cleveland Trencher Co., The 55
Cole Mfg. Co., R. D. 66
Concrete Surfacing Machry. Co. 68
Concrete Termite Drill Co. 76
Continental Motors Corp. 88

Deming Co., The 47
Dodge Div. Chrysler Corp. 1
Dow Mfg. Co. 6
Dravo Corp. 68

Ellicott Machine Corp. 95
Euclid Road Machinery Co. 11

Flintkote Co. 89

General Excavator Co. 75
GMC Truck & Coach Div. General Motors Corp. 64
Gunite Concrete & Construction Co. 92

Hartford Fire Insurance Co. 51
Hartford Accident & Indemnity Co. 51
Hayes Track Appliance Co. 60
Heltzel Steel Form & Iron Co. 9
Hendrix Mfg. Co., Inc. 46
Hyatt Bearings Div. General Motors Corp. 18

Imperial Pencil Tracing Cloth 61

Jaeger Machine Co. 60
Johnson Co., C. S. 12, 13

Keasbey & Mattison Co. 69
Klemp Co., Wm. F. 92
Koehring Co. 13
Koppers Co. 10
Kwik-Mix Co. 13

Lefax 72
Leupold & Stevens Instruments 2

M & H Valve & Fittings Co. 58
Macwhyte Co. 8
McKiernan-Terry Corp. 92
Medusa Portland Cement Co. 53
Mixermobile Mfrs. 90

Nordberg Mfg. Co. 4, 5

Osgood Co. 75
Owen Bucket Co., The 7

Parsons Co. 13
Pittsburgh-Des Moines Steel Co. 76
Powder Power Tool Corp. 93

Raymond Concrete Pile Co. ..... 3rd Cover
Richmond Screw Anchor Co., Inc. 54

Sanstorm Mfg. Co. 77
Sprague & Henwood, Inc. 71
Stefco Steel Co. 91
Stow Mfg. Co. 94

Taylor Forge & Pipe Wks. 87
Templeton, Kenly & Co. 72
Timken Roller Bearing Co. ..... 4th Cover

Union Metal Mfg. Co. 3

Viber Co. 57

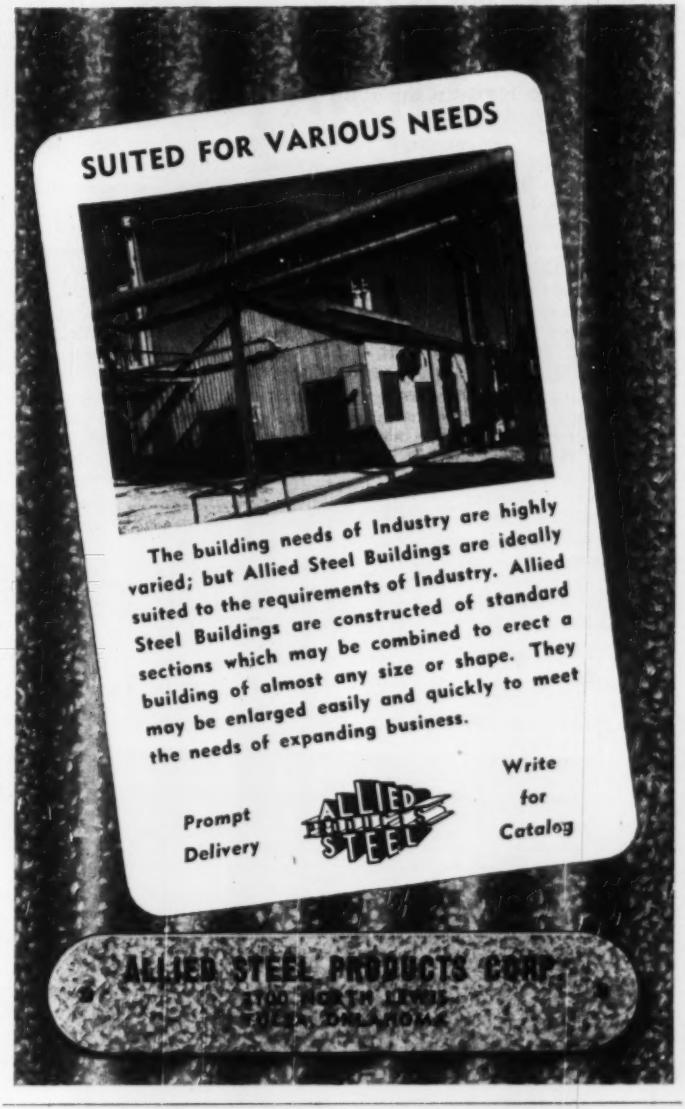
Wellman Engineering Co. 72
Wisconsin Motor Corp. 66

Searchlight Section
Classified Advertising ..... *pgs.* 79-85

ENGINEERING NEWS-RECORD

HOWARD OLSEN, Business Manager — G. R. RAMEL, Sales Manager

Sales Representatives—Fred G. Hudson, L. H. Hunt and H. L. Keeler, 520 N. Michigan Ave., *Chicago* 11; Ralph Dorland, 68 Post Street, *San Francisco* 4; D. S. Robertson and W. G. Payne, 330 W. 42nd St., *New York* 18; A. B. Cozens, 17th and Sansome Sts., *Philadelphia* 3; E. E. Duff, Jr., Hanna Bldg., *Cleveland* 15; B. F. Horn, Penobscot Bldg., *Detroit* 26; W. E. Donnell, Continental Bldg., *St. Louis* 8; C. F. McReynolds, 621 So. Hope St., *Los Angeles* 14; Ralph Maultsby, Rhodes-Haverty Bldg., *Atlanta* 3; J. H. Allen, First National Bank Bldg., *Dallas* 1. Other sales offices—738-39 Oliver Bldg., *Pittsburgh*; 1427 Statler Bldg., *Boston* 16; Aldwych House, *London*, England.


SUITED FOR VARIOUS NEEDS
The building needs of Industry are highly varied; but Allied Steel Buildings are ideally suited to the requirements of Industry. Allied Steel Buildings are constructed of standard sections which may be combined to erect a building of almost any size or shape. They may be enlarged easily and quickly to meet the needs of expanding business.
Prompt Delivery
ALLIED STEEL
Write for Catalog
ALLIED STEEL PRODUCTS CORP.

ELLICOTT

DREDGES — ANY TYPE, ANY SIZE, ANY SERVICE

Only Ellicott offers: **65 years of experience** in dredge building; **a complete line** in all sizes; **undivided responsibility**—your dredge is designed, built and delivered under *one* contract.

Write for catalog: **ELLICOTT MACHINE CORPORATION**
1603 Bush St., Baltimore 30, Md.

ELLICOTT

PERSPECTIVE . . .

How to revise a building code in 10 easy years

You can take this as gospel: There are easier ways to bring a city's building code up to date than by throwing out the old one and writing another in one vast upheaval.

New York City has found a way: Take up your code piece by piece, and you can not only get the job done, but get a flexible code besides. Proof? In less than 10 years, New York has rewritten its vast code in sections, with little noticeable friction. For the first time in its long history, it has a code that is flexible and easily applicable.

But, to preach your gospel and to push accomplishment, you need someone like shrewd, hard-headed Hugh Quinn, of Queens Borough. As chairman of the City Council's building code committee for the past 12 years, he has masterminded the revisions.

No political future?

Something of a political paradox himself, Quinn admits that the major trouble with building codes is that they are politically non-productive. There's little favorable publicity possible from involved technical matters of this kind—and there's plenty of chance to make powerful enemies. Despite this fact, Quinn—a Democrat from a normally strongly Republican borough—has been reelected repeatedly.

The new was old

An insurance broker (he calls his office "Quinn of Queens") who has acted as contractor on small building work, Quinn was first elected to the city council in 1937. He found that the just-outmoded 63-member Board of Alderman (replaced in 1937 by the 25-man city council) had completed a cumbersome, foot-thick document codifying the city's building regulations, a year before. "It took them six years to do it," he comments wryly, "and it was already far out of date, when adopted and the provisions for changing it were so complicated that the very thought of change was discouraging."

"So," says Quinn, "since I had some experience in trying to make head or tail of the code, I started asking questions and suggesting changes. It wasn't a popular subject—and the council was happy to appoint me chairman of a code-revision committee. I've been at it ever since."

How do you go about a job like this? Quinn looked around, discovered that many cities were trying hard and getting nowhere (witness Chicago, Cleveland, Detroit, St. Louis). And he thought he could put his finger on the trouble:

If you bring up the whole code at one crack, you provide too much ammunition for anyone who opposes sections of it. If someone, for example, didn't want changes in the plumbing section, he could attack not only that section, but anything in any of the other hundreds of provisions, to delay the entire action.

"The answer," grins Quinn, "is to give 'em less to shoot at. Just take up plumbing alone—let 'em talk themselves out, but don't give 'em a chance to talk about anything else until you've got the one thing settled."

So the council's code committee works just that way. It decides to take up, say, plumbing. It calls in all the interested parties: The city's various departments, the unions, the engineering societies, the builders, the real estate people. And then it invites anyone else interested. ("We're no geniuses," says the councilman. "We need and will listen to—advice.") These groups hold regular meetings, talk themselves hoarse, argue the fine points—and then an amendment is written and hashed over a while longer.

When all are satisfied, the bill goes to the council as a whole—and is usually passed without further ado. When passed, it automatically voids any previous rulings.

Labor restrictions eased

A sidelight has been relaxation of restrictive labor rulings.

"Just common sense," says Quinn. "Until very recently, for instance, thin-wall copper tubing wasn't permitted in New York City for water pipe. Had to be threaded pipe. One of the reasons was that the plumbers were afraid that the threadless pipe would make less work for them.

"So we called 'em in, and I showed a sample. 'Sure,' I said, 'if you sweat the copper tubing together you won't need to thread it. But supposing a piece of threaded pipe gets clogged in my house. You think I'm going to call a plumber to fix it? I'll get a monkey-wrench, disconnect the pipe and go down to the hardware store to get another piece to put in.

"'But if the tubing is sweated on, and then soldered, I'm afraid to touch it. So I'll call a plumber to fix it.'"

"The plumbers agreed that was horse-sense, and there were no more objections."

It works. In ten years, and with more than 1,000 hearings, New York City has revised the code almost in its entirety (there's one piece yet to be done—air conditioning). At the same time, it has kept sections approved earlier up to date.

What is emerging is a performance code—but one that keeps control of what is accepted in the hands of the city.

Under the code, new materials and new methods can be included at any time, but only if approved by the Fire Underwriters' Laboratories, the ASTM or other recognized testing and standards agencies. However the city, through its council committee and its Bureau of Standards and Appeals, must finally OK the laboratory results before the new technique is legalized.

"The job will never be finished," says Quinn. "And it never should be. It must always be open to change to accommodate new materials and new techniques."

HUGH QUINN—He gives 'em only one thing to argue about (N. Y. Daily News photo).

Raymond MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD
2. STEP-TAPER
3. PIPE STEP-TAPER
4. COMPOSITE
5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements.

1. STANDARD PILES

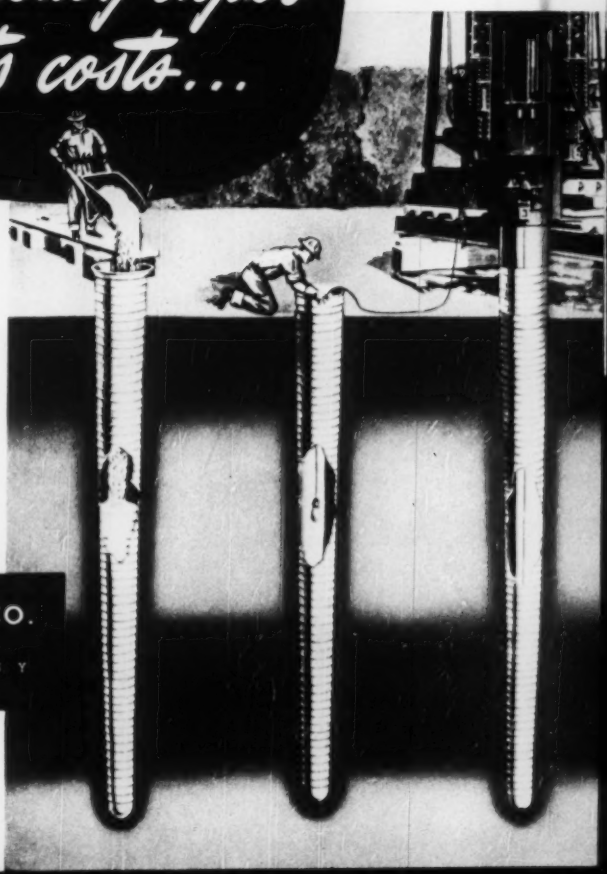
Note that the permanent steel shell maintains the soil pressure developed during driving and while the concrete is setting, thus insuring a perfect pile free from distortion with a high load capacity.

The heavy taper cuts costs...

Raymond Standard Concrete Piles have a heavy, uniformly tapered permanent steel shell. On friction piles, this taper acts like a wedge, giving these specific advantages:

1. Driving resistance is maintained.
2. The load is transmitted to the soil through the entire length of the pile.
3. The load can be carried by shorter piles, because of their greater carrying capacity.
4. Since shorter piles cost less to drive, the taper usually results in substantial savings.

Each of these statements has been tested and proved innumerable times. The evidence is at your disposal at any of our offices. Your inquiry is cordially invited



Raymond CONCRETE PILE CO.

140 CEDAR ST., NEW YORK 6, N. Y.

BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America

For heavy-duty conveyors . . .

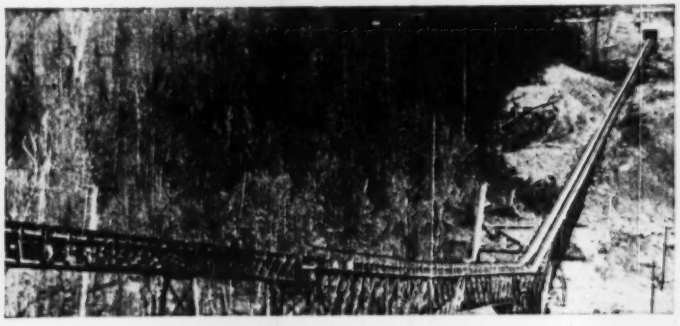
IT'S TIMKEN . . .

FOR over 25 years almost every heavy-duty conveyor — like most heavy duty equipment throughout industry — has relied on Timken® tapered roller bearings for long life and trouble-free performance. For example, The Blue Diamond Coal Company installed this Stephens-Adamson belt conveyor with 476 Timken bearing equipped idlers in 1930 —and at last report they haven't had to replace a bearing yet!

AND TIMKEN . . .

TIMKEN bearings are first choice for tough conveyor jobs like this Jeffrey Belt Conveyor installation used for long-distance sand hauling. Timken bearings provide maximum capacity for radial and thrust loads in any combination. Idlers turn freely, belt wear is reduced to a minimum. Effective seals keep lubricant *in*, dirt and moisture out. Lubrication and maintenance time is negligible.

AND TIMKEN® AGAIN!



AND here's one of the latest Timken-equipped jobs — a 1,485 foot Robins conveyor at The Gauley Mountain Coal Company's Williams River Mine. It's another addition to the thousands of miles of heavy-duty conveyors that roll on Timken bearings. There's no other bearing with so much to offer, no other bearing so fully proved. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

Whenever the going's tough industry turns to

TIMKEN

TAPERED ROLLER BEARINGS

Typical application of Timken bearings for conveyor idlers.

NOT JUST A BALL ○ NOT JUST A ROLLER ○ THE TIMKEN TAPERED ROLLER ○ BEARING TAKES RADIAL ○ AND THRUST ○ LOADS OR ANY COMBINATION